Railway Age

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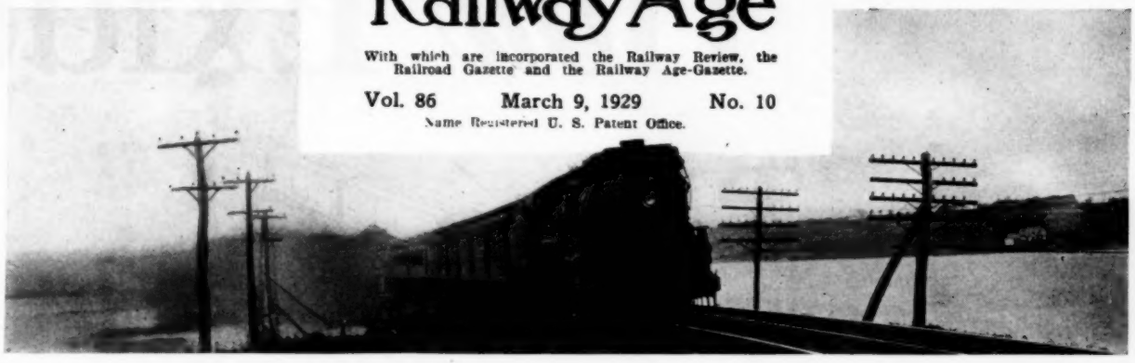

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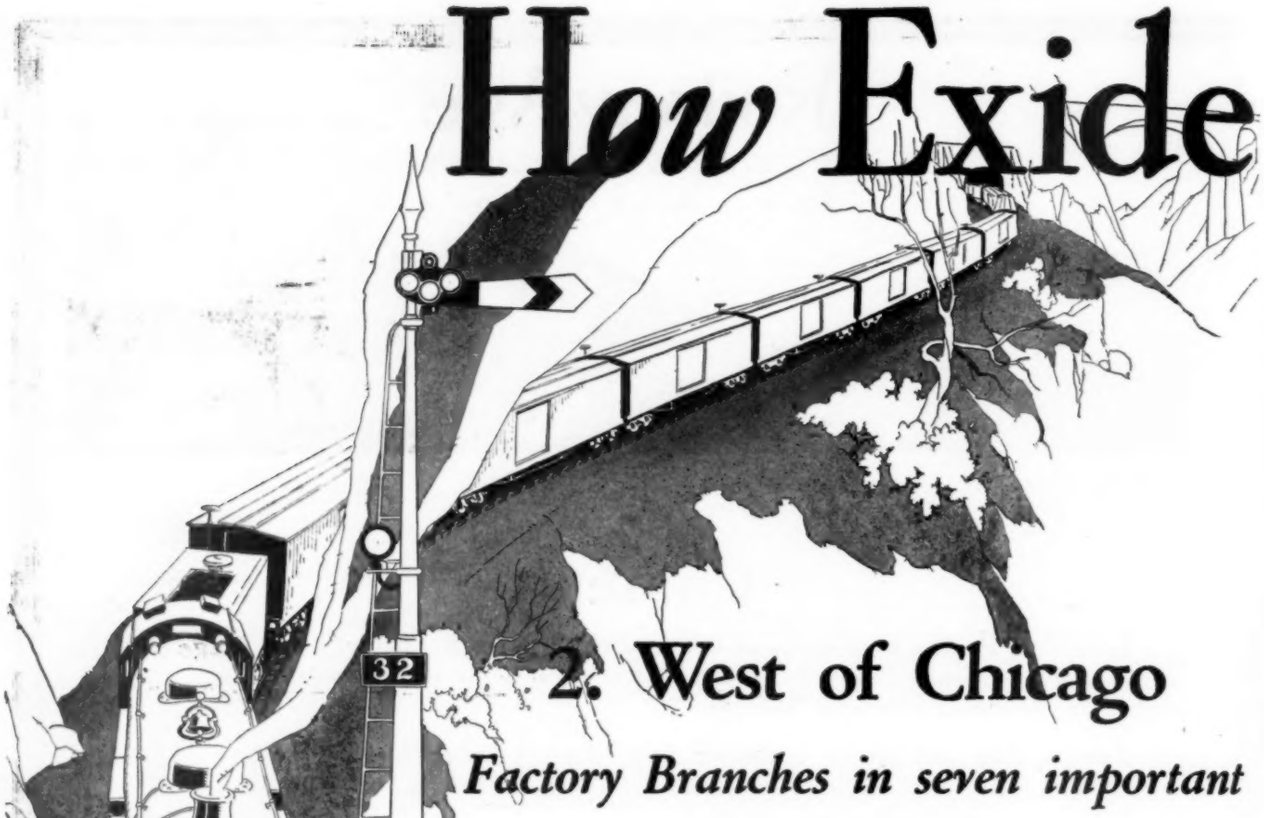

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Railway Age

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February Equipment Markets

FREIGHT car orders for the month of February, as reported in the *Railway Age*, showed a gain of nearly 2,000 units over the first month of the year and were more than double those for the corresponding month of 1928. Orders for 14,393 freight cars were listed during the past month, as compared with 6,758 in February, 1928, and 12,452 in January, 1929. Locomotive orders for the month were almost three times the total for February, 1928. This also is a corresponding increase over the preceding month of this year in which only 28 locomotives were reported as ordered. Passenger car orders fell below the total for the corresponding month in 1928, with a total of 21 in comparison with 48 placed during February, 1928. However, with the recent approval by a number of roads of annual budgets, which include large funds for rolling stock, it is expected that there may be a decided rise in passenger car purchases within the next few weeks. The above figures include orders reported in the *Railway Age* of March 2, all of which orders were placed during the last few days of February.

Solving the Passenger Traffic Problem

THE wide interest which has been aroused in the "Blue Comet" trains of the Central of New Jersey, rumors that other roads are contemplating similarly novel services, and the rapid expansion of railroad-operated motor coach lines all show the increasing effort of the railways to meet the problem of declining passenger revenues. The greatly reduced day-coach rates provided to the Pacific Coast is another instance of railroad concern with the problem. It is a serious situation and one which—for long distance travel—would never have become so dangerous had not governmental policy proved so sluggish in facing plain facts of justice and sound economics. There are situations in which the motor coach is plainly a more convenient and more economical transportation medium than the railroad. Long distance transportation is not one of these situations. Motor coach lines have been able to compete for such traffic by making lower rates. They have been able to make lower rates, in the case of interstate, long-distance transportation, solely because they have not been forced, as the railroads are, to pay in full for the public facilities they use and because they can operate or cease operating from day to day without let or hindrance. It is encouraging to see the railroads increasing their efforts to meet this situation. It cannot be permanently settled, however, until motor coach lines pay the full rental value for their use of public property—the highways—and until they are held to the same requirements as the railways as to regularity and quality of service.

Innovations to Hold Traffic on British Railways

UNDER the title "1928—a Year of Progress" the various innovations in operations and services, which were introduced during the past year on British railways, are listed in a recent issue of the official publication of these roads. The innovations in freight service include: Introduction of road-rail containers, glass tank cars for milk, formation of freight concentration centers, extension of rail-head depots (i.e., warehouse service) and C.O.D. for railway traffic. With reference to passenger service the list includes: Increased use of steam rail cars on branch lines, third-class sleeping cars, extension of day and half-day low-rate excursions, excursions to inspect plants, docks and Atlantic liners, rail-theatre matinee trips, rail-road-steamer trips, train-hotel-golf excursions, extension of week-end tickets, reduction of rates on private automobiles accompanied by passengers, longer non-stop runs to Scotland, and payment of holiday fares by installments. Many of the foregoing have already been adopted by American roads and some are under consideration while others do not lend themselves for adaptation to operating and traffic conditions in this country. The list is, nevertheless, interesting since it reveals the ingenious efforts of British railway officers to meet the problems of declining traffic. These innovations seek to retain as much traffic as possible on the rails while at the same time highway subsidiaries are being rapidly organized by the railways under the recently acquired Parliamentary authority in an effort to recover some of the traffic previously lost.

A Significant Development in Education

A RECENT development in educational practice which is being extended in several of the more progressive universities seems to offer a definite suggestion for education for railroad work. This is the increased efforts which are being put forth in these institutions to develop students who, while efficient in their special lines, nevertheless are given instruction of a nature to enable them to understand the important aspects of other specialties as well. One university is now requiring its students to take a general course in reading in subjects outside the field in which they are specializing. Before they are graduated they must pass an examination, not alone in the subjects which they have been studying regularly, but also on their general knowledge of a wide range of subjects. Is not this activity on the part of these universities suggestive to those concerned with railroad problems? It is not enough that a railroad man in one department should know thoroughly the work of that department. He ought also to have a thorough understanding of the problems of other departments, and not of his railroad alone but all other railways as well. If the percentage of railroad

men who are thoroughly informed about the major aspects of railroad work were materially increased, a long step would have been taken in the solution of the problem of public relations. There is no quicker or more effective way to put an end to a misunderstanding than to have it authoritatively challenged with the facts whenever it appears. A vanguard in formal education has set an example which may well be emulated in industrial education.

The Trend in Freight Car Conditions

FROM time to time attention has been directed in these columns to the trend in the condition of freight cars as indicated by the data furnished by the Car Service Division for the Class I railways of the United States. It has been pointed out that conditions have been steadily improving for a number of years until 1928 with some evidence that, if the turning point has not been reached, further improvement has ceased. Complete data for the year 1928, now available, bear out this suggestion. With the total number of cars receiving repairs, both classified and running, considerably below the number receiving similar repairs during 1927, there is evidence of a consistent though slight increase in the percentage of cars under or awaiting repairs. There has been a steady decrease in the number of cars receiving heavy repairs. Averaging monthly from 69,700 in 1925 to 62,000 in 1927, the number had dropped still further in 1928 to approximately 59,900, the output running consistently less during the greater part of the year. Similarly, the average number of cars receiving light repairs monthly during 1925 was 1,321,000; this declined to 1,240,000 in 1927. Last year the average was 1,151,000, and here again the decline in the average reflects the condition obtaining throughout practically all of the months of the year. It cannot be said that the slight increase in the percentage of cars unserviceable indicates definitely the beginning of a period of deferred maintenance. The figures do suggest, however, that the reserve serviceability, resulting from the rehabilitation program of the last six years now practically completed, has ceased to increase and will probably continue to decline unless kept up to its present level by a growing expenditure for maintenance or the purchase of new equipment.

The Montreal Terminal Report

ON another page of this issue will be found a report of the recommendations of Frederick Palmer, the British engineer who made the plans for the completion of the Hudson Bay Railway, on the subject of the Montreal terminal situation. Mr. Palmer made this report at the request of the Canadian government, which will be required to approve whatever expenditures are necessary by the Canadian National as its part of the project. The proposed passenger terminal was conceived by the C. N. R. as its own project. Its facilities in Montreal at the present time are scattered and the principal station, Bonaventure, is an antiquated structure. Moreover, it has a very serious grade crossing problem which the Montreal municipal authorities are insistent that it solve and solve quickly. Following the announcement by the Canadian National of its station plans—which incidentally Mr. Palmer praises highly—it was suggested that perhaps as an alternative an arrangement might be made whereby the Canadian National could join with the Canadian Pacific in a new station on the site of the latter company's modern Windsor street structure. Mr. Palmer does not approve this plan. He recommends a terminal development which will not only meet the requirements of the railroads, but which also will go farther and provide urban rapid transit facilities for the Island of Montreal. He further suggests virtually a complete pooling of the facilities of the two railroads on the island, not only for passenger but also for freight service. Plans and engineer's reports do not always connotate early activity. In this case, however, there seems to be a strong demand on the part of civic interests for an early decision of one kind or another by the government. It will be remembered that Mr. Palmer's recommendations with regard to the Hudson Bay Railway resulted in immediate activity. It will be interesting to see whether he is as fortunate in the present instance. In any event it would appear that a major railroad improvement may be undertaken before long in Montreal, whether it follows closely the recommendations of Mr. Palmer or not.

A General Survey of Motive Power Requirements

DURING the past six years the principal efforts of the railroads with respect to motive power have been devoted to the modernization and rehabilitation of existing locomotives. Beginning in 1923 a heavy program of rebuilding and modernizing was undertaken, and this work has continued in decreasing volume since that time. It now appears that full advantage has generally been taken of the opportunities for betterments of existing power and that future improvements in motive power will have to depend mainly on the purchase of new locomotives and the retirement of those not suitable for rebuilding and modernizing.

In most discussions of motive power, attention is largely directed to the problem of heavy main line freight service. It is in this service that the demands occur for locomotives of constantly increasing horsepower on tractive capacity. In the concentration of attention on this branch of the service there is a marked tendency to overlook the possibilities for profitable investment in such services as the numerous branch lines largely devoted to meeting the local requirements, secondary main lines and switching service.

Is it not time that these secondary services should come in for careful study in their own right? The constantly increasing capacity of main-line locomotives, together with the limited opportunities for utilizing motive power of increasing capacity for the secondary services, have removed the opportunity for the efficient utilization of the motive power retired from the main line. There has always been a tendency to utilize obsolete road locomotives in switching service. Generally speaking, such locomotives are entirely unsuited for such service, both in the general characteristics of their design and in their lack of efficiency commensurate with that obtainable in switching locomotives embodying all the modern features of design and proportions. These facts all suggest that it is high time to visualize the motive power problem as a whole rather than to continue to concentrate attention on the main-line requirements alone.

In at least one case the installation of a relatively

small number of modern switching locomotives, accompanied by the retirement of the worst of the old power and a general realinement of the switching locomotive assignments has resulted in a fuel saving in switching service of almost 20 per cent.

This is only one factor in the problem. There is also the question of maintenance. The use of locomotives in branch-line and switching service, in which but a relatively small proportion of their potential capacity can be utilized, will probably result in considerably higher maintenance expenditures than would be required were modern locomotives built to fit the characteristics of the service.

All of these considerations suggest the need for a general survey of motive power requirements. Such a survey, undertaken with the purpose of laying out, say, a five-year program, would undoubtedly bring to light many opportunities for profitable investment in modern locomotives for services calling for much less than the maximum capacity now attainable in locomotives design for heavy main-line service.

Care Essential in Autogenous Welding

UNREMITTING care is the price which railroads must pay if they are to utilize to the full extent the great economies of autogenous welding without experiencing excessive failures of welded parts. Locomotive and car maintenance work has been revolutionized by this process, commonly considered to include thermite, oxy-acetylene and electric welding, and, while any estimate of actual savings can be little more than a guess, it is no great exaggeration to say that, in the past 15 years, the growth and extensive use of autogenous welding has reduced the actual man-hours' of mechanical maintenance work 25 per cent.

It is an established fact that, on many operations in railroad shops, particularly locomotive shops, blacksmith shops and locomotive boiler shops, the saving is not 25 per cent, but 50 to 75 per cent, or even more. Locomotive frames are welded without the labor of removing them to the blacksmith shop. Expensive forgings, formerly shaped laboriously under the steam hammer, are now cut quickly and economically from the original steel billets. Boiler sheets are patched or renewed at a fraction of the former cost and in much less time, thereby permitting power to be returned more promptly to service. Enginehouse operations too numerous to mention are greatly expedited.

The danger is that in the enthusiasm to effect economies by autogenous welding, the various methods will not be kept within proper limitations, welds consequently being made which represent unsound practice, either from a safety or economy standpoint. If any further demonstration were needed, the annual report of the chief inspector, Bureau of Locomotive Inspection, Interstate Commerce Commission, for the fiscal year ended June 30, 1928, carries ample proof that unsafe autogenous cutting and welding practices are still followed in spite of 15 or more years' extensive experience with the process. A driving wheel flange is trimmed with a cutting torch and the tire breaks; a hole is burned in the plate of an engine truck wheel, presumably for the insertion of a lifting hook, and causes cracks; improper and unsafe welds are made in boiler plates.

In connection with boiler failures, particularly explosions due to low water and failure of the crown sheet, the mistake is sometimes made of attributing the failure to autogenous welding, when, as a matter of fact, the explosion would have taken place had the seams been riveted, or boiler sheets without seams been used. The answer to the problem of autogenous welding, from the railroad standpoint, is the provision of trained welding operators whose work is tested periodically and carefully supervised to keep it within the proper limits.

Travel by Rail

IT is probable that one-half of all the traveling done by railway in the United States this year, exclusive of commutation travel, will be done in sleeping and parlor cars. This simple fact illustrates strikingly the changes that have occurred in this country during the last decade, both in travel and in general economic conditions. Until a few years before the war practically all traveling within the country was done by rail. It is not known what proportion of it was done in day coaches, but it may be reasonably estimated that while sleeping and parlor car business had been steadily increasing for years, travel in day coaches, prior to the widespread use of automobiles, was never less than 75 per cent of the total traveling done.

The collection of the surcharge on sleeping and parlor car tickets, beginning in 1921, afforded for the first time a basis for estimating with approximate accuracy the proportion of traveling by rail done in day coaches and in sleeping and parlor cars. In that year, in spite of the fact that the railways already were subject to a great deal of motor vehicle competition on highways, the amount of traveling by railway done in day coaches was about 69 per cent of the total and the amount done in sleeping and parlor cars about 31 per cent. Travel in day coaches has declined in every year since then, excepting 1923, and in 1928 was about 42 per cent less than in 1921.

On the other hand, travel in sleeping and parlor cars steadily increased until 1926, and last year was about 22 per cent greater than in 1921. In consequence last year only about 51½ per cent of the traveling by rail done in the country was done in day coaches, while about 48½ per cent of it was done in sleeping and parlor cars.

These facts show that of those who are disposed to travel by rail a constantly increasing proportion choose to pay the greater cost of riding in sleeping and parlor cars in order to get the better service afforded in them rather than to use the less expensive day coach service. There are, however, certain facts regarding the trend of travel in sleeping and parlor cars within recent years that are naturally disturbing to officers of the railways and the Pullman Company. While total travel in sleeping and parlor cars increased until 1926, it was about 3 per cent less in 1927 than in 1926 and about 1½ per cent less in 1928 than in 1927, the total decline in the two years being about 4½ per cent.

What have been the causes of this decline? Has it been due mainly or entirely to changes in general business conditions or largely to the increasing competition of the motor vehicle? It seems probable that it has been mainly due to changes in general business conditions. There was an extraordinary amount of travel by railway in the southeast in 1925 and 1926 because of the

boom in Florida. Most of this was done in sleeping cars.

Data regarding the matter are not available, but it seems probable that the decline in total travel in sleeping cars has been largely or mainly due to the difference between the conditions that prevailed in the southeast in 1925 and 1926, on the one hand, and in 1927 and 1928, on the other hand. The fact, however, that travel in sleeping and parlor cars has declined during the last two years, is one of the causes of which should receive careful study.

"Reciprocity Buying"

NO editorials ever published in the *Railway Age* have attracted more attention, or been more generally commended by railway officers and manufacturers of railway equipment and supplies, than those regarding so-called "reciprocity buying," which were published in our issues for January 19 and February 2. The attention they have attracted and the comment they have evoked are significant indications both of the extent to which efforts to use traffic to influence railway purchases have increased, and of the number of persons who have begun to realize the menace to railways, to manufacturers and to shippers presented by the growth of this abuse.

That what is beginning to be generally called "reciprocity buying" is by no means confined to the railroad field is illustrated by an article entitled, "Reciprocity Buying—The Ball and Chain of Distribution," which appeared in the magazine "Sales Management and Advertisers' Weekly" for February 16, under the signature of C. D. Garretson, president of the Electric Hose & Rubber Company.

Mr. Garretson described the practice and its results from the standpoint of the manufacturer rather than of the railway, but most of the points he makes are as applicable in the railway as in the manufacturing field. For example, he says that the practice in effect "constitutes a boycott". This is the principal reason for its effectiveness in the railway field. A large industrial concern whose relations with the railways, direct or indirect, are entirely those of a shipper will naturally route its traffic almost exclusively with a view to getting good transportation service. If, when it becomes directly or indirectly interested in railway purchases it diverts traffic from one railway to another regardless of transportation considerations, and because one road will yield to its pressure regarding purchases and the other will not, does not its action constitute a boycott of the road that will not yield? And this calls attention to one of the principal points regarding the whole matter—namely, that when railways allow their purchases to be influenced by traffic, this is much more often due to fear of having traffic diverted from them than to the expectation of getting traffic that they would not otherwise get. They are influenced more by the fear of punishment than by the hope of reward—which certainly makes the practice look much more like boycotting than ordinary business procedure.

Mr. Garretson refers to the "demoralizing effect on the morale of many of those who are responsible for the success of the business." The railways employ men as purchasing agents because of their knowledge of commodities and markets and their skill in buying. They employ technical experts largely to advise their purchasing agents regarding the merits of different devices and materials. It may be said of railway purchasing and technical officers in particular, as Mr. Garretson says of purchasing agents in industry in general, that "when their hands are tied by reciprocity agreements they are prevented from giving their best service, and they naturally resent the imposition."

Mr. Garretson calls attention to one of the most remarkable features of "reciprocity buying." This is that "the most energetic practitioners of the policy are large industrial concerns that employ staffs of economists and statisticians to ascertain facts and figures for the guidance of the officials of their companies." They employ these staffs of economists and statisticians to ascertain facts and figures as a means of furthering the most efficient and economical operation of their own companies. There is nothing more essential to the prosperity of large industrial concerns and to the economic welfare of the American people, however, than that our railways shall be efficiently and economically managed, and the use of traffic to influence railway purchases is plainly inimical to efficient and economical railway operation. Is it not strange that some of the largest industrial concerns in the United States—concerns that spare no effort to secure efficiency and economy in their own business, and that would be the first and loudest to criticise lack of them in the railroad business—are nevertheless among the most aggresive and effective in using their traffic to influence railway purchases?

How "reciprocity buying" tends to affect adversely the efficiency and economy of railway operation might be illustrated in many ways. During the recent severe winter there was a remarkable epidemic of hot boxes on the trains of numerous railways. Men who are especially well-informed say that in large measure this was indirectly due to the influence of traffic upon purchases. They say that some shippers of oil have effectively used the traffic argument to influence railways to use lubricating oils sold by these shippers, almost regardless of quality, and that the unsatisfactory quality of the oil used by numerous roads was the principal cause of the epidemic of hot boxes. A single hot box may cause delays to traffic and increases in operating expenses that will more than offset all the net earnings that could be derived from a large amount of oil traffic.

One thing is certain, and this is that continuance and increase of the practice of "reciprocity buying" can, in the long run, have only harmful effects upon the railroad industry as a whole. It may temporarily benefit individual roads, but this will be far more than offset by the injury it will do to the industry. The trading of traffic for purchases, and purchases for traffic, will never increase by an ounce the total traffic, or by one penny the total earnings, of the railroad industry. The effects upon the industry as a whole will necessarily appear in the service and the operating expenses. It tends to impair the service because the shipper who gets purchases in exchange for his traffic reduces the force with which he can demand good service in exchange for it. It tends to increase operating expenses because a concern which relies largely upon its own or some other concern's traffic to influence railway purchases in its favor is much more likely to be able to sell poor goods or get excessive prices than one that has to rely almost solely upon quality and price as selling arguments.

A practice which can never possibly be of any benefit whatever to the railroad industry as a whole, but on the contrary must be harmful to it, and must become more harmful as it becomes more prevalent, is one which everybody who desires to help promote the welfare of the railway industry should wish to see destroyed, root and branch.

Southern Pacific of Mexico Is Developing a New Frontier*

Traffic prospects of the system recently completed from the United States border to Guadalajara, Mex.

By Raymond Chambers

Professor of Economic History, University of Buffalo, Buffalo, N. Y.

THE last link in the trunk line of the Southern Pacific of Mexico was completed on April 1, 1927, and placed in operation ten days later. The striking engineering difficulties encountered by the company in building this line through the western Sierra Madre from Tepic to La Quemada were pointed out by the writer in the *Railway Age* of April 9, 1927. The present article will describe the operating history of the company and the traffic possibilities of the West Coast.

An empire the size of California stretches for 1,200 miles south of Arizona. Possessing California's abundant resources, it is still largely undeveloped and awaits the coming of settlers and of capital. Valued hitherto solely for its mines and cattle, as was early California, the same agricultural revolution that began in California a half century ago is now stirring here. The West Coast is Mexico's Far West, her largest and probably her richest frontier; certainly the one which will have the fullest development in the next several decades.

Previous Isolation from Central Mexico

The precipitous range of the western Sierra Madre cuts off the west Coast from central Mexico. This range is even more difficult to cross than the eastern mountains which flank the Gulf of Mexico, for its

Photo by Hoag & Ford, Los Angeles.

Station at Pesquira, Sonora

average height is 10,000 ft. as compared with 8,000 ft. in the east, and it is much broader, reaching a maximum width of 300 miles in the north. In Sinaloa, the drop from the central plateau of Mexico to the coast plain is abrupt, with only a narrow piedmont belt, but in Sonora and Nayarit tablelands resembling those in the ranges of eastern Mexico lie between the coast plain and the central plateau. Nevertheless the height and steepness of the mountain barrier are such that, north of Colima, only five practicable rail routes have been located across it, and only one of these, that of the Southern Pacific, has offered sufficient advantages to warrant use.

The West Coast is a triangular area tilted on its apex, some 50 miles wide in the south and 200 miles in the north; the average width to the crest of the Sierra is 130 miles, with a coastal plain some 30 miles wide extending almost the entire length of 1,200 miles. At

Photo by Hoag & Ford, Los Angeles.

The Southern Pacific Station at Hermosillo, Sonora, is Commodious and Attractive

Mazatlan, spurs of the Sierra reach the sea and cut the plain into halves, but the two sections are linked by rail and have essentially similar geographic, economic and social conditions. Behind the plain rise a succession of tablelands and foothills. If the Pacific slopes of the Sierra are included, the West Coast region comprises the states of Sonora, Sinaloa and Nayarit, and also small portions of Chihuahua, Durango and Jalisco. The first three states have a total area of 154,000 sq. mi., only 2,000 sq. mi. less than California, and one-fifth the area of the republic. In size, topography, soil and climate, the West Coast bears a striking resemblance to the Golden State, while in general appearance it resembles southern California before the latter's phenomenal development. The climate is hot and subtropical on the coast, cooler and comfortable on the plateaus. The yearly rainfall, only 2½ in. near the American border, increases to a maximum of 60 in. in exceptional years in southern Nayarit.

Area Tributary to Southern Pacific of Mexico

The future traffic area of the Southern Pacific of Mexico will comprise both the West Coast and the great regions on the plateau tributary to Guadalajara and Mexico City. The three northwestern states, So-

* This article is based on personal observations on the West Coast, conversations and correspondence with railway and government officers and business men on the coast, and printed and manuscript materials. The writer is especially indebted to various officers of the Southern Pacific of Mexico, President H. G. Titcomb, L. G. Hoff, and J. Alarcon, also to P. L. Bell, former U. S. Trade Commissioner and industrial agent of the Southern Pacific of Mexico, author of "The Mexican West Coast and Lower California."

nora, Sinaloa and Nayarit, have only 700,000 inhabitants, five per cent of those of the entire country; but Jalisco, Colima and Michoacan have a population of 2,272,000, three times those of the northwestern region. These three latter states form the Guadalajara distributing district, from which the railroad will receive its greatest additional traffic. If we add the Mexico City district and Lower California to these groups, the resulting area is about half that of the republic and contains 5,166,000 people, one-third the population of Mexico and slightly less than that of our Pacific states.

From early times until the recent past, mining and stock raising were the principal industries of the West Coast. The back country of Sinaloa and the western slopes of the Sierra in Chihuahua are also rich in minerals, while Nayarit and northern Jalisco are not without them. Deposits are of many kinds, but only copper, silver, lead and graphite are mined in any quantity today, although the value of the gold and zinc

The Location of the Southern Pacific Along the West Coast of Mexico

produced is considerable. For several years the mining industry has been depressed, since many of the remaining deposits that have been explored are low-grade and prices and working conditions have been unattractive. Shipments from the Sonora copper region are large but pass over the Southern Pacific of Mexico for only a short distance. Except for these shipments and for small but increasing ones from the Magdalena district of Jalisco, this company gets almost no mineral traffic.

Minerals are only one of the resources of the West Coast. Valuable timber is found on the plateaus and mountains, but (except south of Acaponeta) timber suitable for export grows only on the high sierras, generally too inaccessible to permit of shipping. Before the decade of revolutions, 1910-20, the plateaus of Jalisco and of northern Sonora supported the largest herds in the republic, while Sinaloa and Nayarit had many cattle. The two latter states lost most of their cattle during the revolutions and are only beginning to get them back; Jalisco and Sonora suffered also, but have now recovered. The fishing industry may have an important future, as the waters off the West Coast contain some 100 varieties of edible fish, 40 of which are numerous enough to be of commercial value.

But agriculture is, and undoubtedly will remain, the leading industry. Although most of the land is arid and mountainous, the mild climate and fertile soil give great promise for the future, when storage and irrigation will permit full utilization of water supply.

The ordinary staples are widely cultivated. Corn is grown all along the railway line. The principal wheat districts are the Hermosillo and Yaqui valleys of Sonora. An interesting development is that of rice, which is grown successfully in commercial quantities in the Yaqui valley. The Mocorito and Mayo deltas raise more garbanzos (chick-peas) than any other district in the world, while the Sinaloa valley produces a considerable quantity also. The growth of agriculture in the largest delta, the Yaqui, has been very rapid; the area under cultivation (planted chiefly to cereals) rose from 25,542 acres in 1919-20 to an estimated 100,000 acres in 1926-27.

The chief tropical product is cane sugar, which is also the most dependable of all West Coast crops; last year the five mills produced some 42,000 metric tons of refined sugar, and this should increase to approximately 50,000 metric tons for the present season on account of further development of this industry.

The winter vegetable industry has arisen almost entirely since the revolutions. The tomato acreage, 5,000 to 6,000 in 1918, increased to 22,600 in 1925 and to 47,270 in 1927. In addition there were 5,270 acres of other perishables in 1925 and 11,904 acres in 1927. Attention is concentrated mainly on tomatoes, but cantaloupe, chili, peas and onions are raised in quantity and all kinds of vegetables are grown. The Los Mochis district in the Fuerte valley, with over 20,000 acres under cultivation, is the center of this industry, but the other agricultural districts of Sinaloa and the Mayo and Yaqui valleys engage in it also. The business is almost entirely in the hands of Americans, and is purely an export one, shipments being made to the United States, with railroad rates to the central United States from Sinaloa the same as from California. The fact that the climate permits the crops to mature ahead of those in the southern United States furnishes the basis for the industry. Tomato shipments are made from December until May, when the American crop comes on the market.

Citrus fruits do splendidly on the West Coast soil; as well, it is said, as in California. But the production is small, for the Mexican demand is slight and importation into the United States is forbidden.

The present main line traffic is highly seasonal in character, the peak occurring during the tomato season. The shipments of winter vegetables and fruits have grown steadily from 91 carloads in 1916 to 6,289 in the season of 1926-27. Tomatoes form the bulk of these shipments, the number of cars increasing from 54 in 1916 to 4,636 in 1926-27.

The chief shipping districts for perishables in 1927 were the Fuerte, Sinaloa, Culiacan and San Lorenzo valleys in Sinaloa, the Yaqui and Mayo valleys in Sonora, and (if bananas are included) the valleys of northwestern Nayarit. Last year about forty per cent of the total carloads came from the Fuerte valley, compared with 60 per cent in 1925. The tomato shipping stations are mainly in Sinaloa, with some in northern Nayarit and the Mayo valley of Sonora. Other crops are shipped principally from the following districts:

oranges and lima beans from Hermosillo; cantaloupe, lettuce, and onions from the Yaqui valley, chili from Los Mochis and the Culiacan valley, honey-dew melons from Cajeme and peas from the valleys of southern Sonora and Sinaloa.

Sugar is shipped from the Mazatlan division and from the Fuerte valley; most of it goes to the central plateau, since our high duty prevents any quantity from reaching American markets. Alcohol has a good local market, but is no longer shipped to the United States. Banana shipments from the Mazatlan and Quila districts of Sinaloa and the valleys of northwestern Nayarit are becoming important. Owing to the difficulties of marketing them in the United States, few banana shipments were made before the summer of 1927, but the acreage was enough to supply 3,000 carloads for export by the end of the year. Actual banana exports in 1927 were 229 cars, for banana production received a serious set-back that winter, but the industry is recovering rapidly.

Cattle shipments, although reduced by the revolution, are still numerous and are handled in train-load lots. The cattle are shipped at all seasons, with shipments generally to Mexico City or other interior Mexican points. At present such shipments are estimated at 8,000 head per annum. Cattle exports amounted to 353 cars in 1925 and 412 in 1926, but fell to 286 cars in 1927. Livestock shipments are mainly of steers, but there is a considerable traffic in horses and mules, and a light and unsteady shipment of hogs, sheep and goats.

Growth of Traffic on Main Line

On the main line most of the international traffic is northbound; on the Naco-Cananea line, southbound. Total traffic for the entire system, including both through and local freight, is very evenly balanced between northbound and southbound, although the bulk of the northbound traffic comes during the vegetable shipping season. Now that the railroad is completed, the direction of domestic traffic is expected to be southbound, since the staples of the West Coast will move

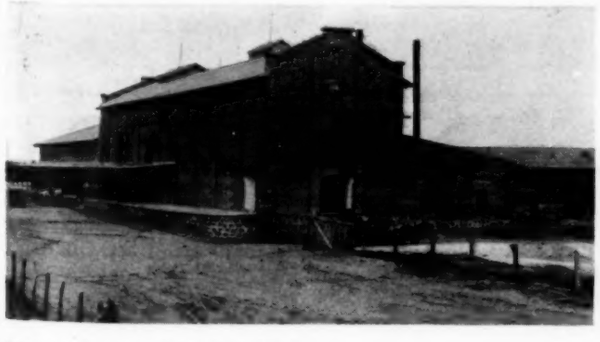

Photo by Hoag & Ford, Los Angeles.
A Flour Mill at Navojoa, Sonora

into Central Mexico via Guadalajara, while manufactured goods from the United States will continue to enter the West Coast from the North. But the northbound movement of perishables will continue, as the United States will always afford a better market for such products.

Import traffic into Mexico has consisted mainly of manufactured products; the leading classes being structural steel, mining and smelting supplies, agricultural implements, automobiles, box shooks, machinery, petroleum and petroleum products, meat products and canned goods. For the Nogales gateway, imports in 1925 exceeded any previous year, and the exports in 1927 were 6½ times those of 1919. Imports and exports via Naco, great in 1919 and 1920, shrank thereafter to half their former size. The combined imports of both gateways were high in 1926 but fell off heavily in the following year, while the exports were greater than ever before.

Carloads of Exports and Imports Via Nogales and Naco

	1919	1920	1921	1922	1923	1924	1925	1926	1927
Imports (into Mexico)	5,857	5,482	1,493	3,150	5,041	3,646	3,673	5,071	2,953
Exports (from Mexico)	2,062	4,439	2,015	3,705	4,477	5,387	5,710	8,668	8,945

Local traffic has increased steadily since 1919. Local freight moves toward the ports, most of it consisting of agricultural products. The chief commodities carried are bran, beer, corn, cattle, flour, fuel wood, fruit, garbanzos, hay, lumber, limes, oranges, petroleum, rice, sugar, tan bark, tobacco and wheat. The above statements refer only to carload shipments, l.c.l. freight being small in volume.

Passenger traffic is mostly local and some 70 per

Photo by Hoag & Ford, Los Angeles.
Mazatlan is an Important Shipping Point

cent is second-class. The number carried has been steady, although since about 1920 the incoming Americans have caused some increase. With the opening of the through line in April, 1927, the company received a large and unexpected increase in both passenger and freight traffic in both directions.

Rates Are Fixed by Concessions

As with other railroads in Mexico, the concessions specify the maximum rates for the two classes of passengers and for each class of freight. The Southern Pacific's freight tariffs are class rates, with 12 numbered classes, the charge for the first class being approximately 2.67 times that of the twelfth. There are also commodity tariffs, import and export rates, and carload rates. The class rate is based on distance; in each class the rate for the first 1 to 20 kilometers is the same, thence increasing by a fixed amount for each kilometer up to 100; from there on, it is graduated according to a sliding scale prescribed by the concession. Thus the first-class rate for 200 kilometers (124 miles) is 2.325 centavos (approximately 1.13 cents per metric ton (2204 lb.), although double the rate for 100 kilometers (62 miles) would be 2.400 centavos. But these are maximum rates and are charged only on small-volume traffic.

Import and export shipments receive low through rates. The concession for the line from Empalme south calls for a 50 per cent discount from the rate when export traffic is carried over 250 kilometers. The company maintains through freight rates with railways in the United States, rates on eastbound transcontinental traffic being generally on the California basis, with

three basing points, Empalme, Guaymas and Mazatlan. The two latter cities are competing distributing centers, although Mazatlan is 474 miles farther south than Guaymas. No joint rates exist between the Southern Pacific of Mexico and the little independent lines on the West Coast; this is said to be due to the insufficiency of the accounting forces of the smaller companies.

No Fundamental Changes in Rates Since 1910

No fundamental changes in rates have occurred since the opening of the revolutions, but changes in particular rates (nearly always reductions) have been made to assist new industries. Water competition has been the chief factor in causing rate changes, but has figured seriously only in connection with international and interline traffic and not with local shipments. The Mexican government formerly allowed the company to meet competition by making lower rates to competitive points, except in cases of purely commercial competition; but recent laws do not permit this except under such conditions as make the policy unprofitable.

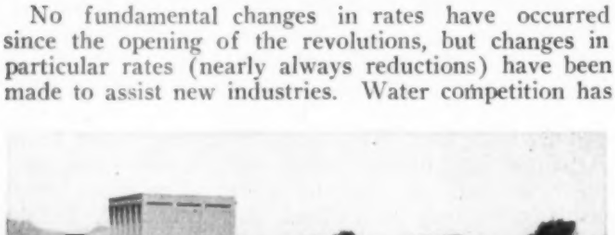

Photo by Hoag & Ford, Los Angeles.
Icing Plant and Part of Icing Platform at Empalme, Sonora

The National Railways, in connection with the government-owned Mexican Navigation Company, make lower rates on some articles from Pacific ports to the capital via Manzanillo than they do from El Paso or other border towns to the metropolis, notwithstanding the rise in excess of 7,000 ft. involved in the rail haul via Manzanillo. Prior to the completion of the line to Guadalajara, many competitive articles destined for central Mexico could not be handled by the Southern Pacific System, for even if it were to carry them free to El Paso, the rates from there to the capital would still exceed that direct from the Pacific Coast. Yet, even under these conditions, the road was able to carry some articles such as sugar, despite higher rates, since shippers preferred fast and frequent service without rehandling to cheaper service which did not possess such advantages. Free car storage is allowed for 48 hours, after which a flat rate of 10 pesos ($5) a day is charged for demurrage.

Passenger rates are of two classes, as elsewhere in the republic. Numerous tickets are sold at reduced rates, both for trips from the United States and for local excursions to bull fights and carnivals; the round-trip rate is usually one-half or one-third more than the one-way fare.

Operation Since the Revolutions

All trains are freight or mixed trains. On the main line, passenger trains run three times a week in each direction between Nogales and Guadalajara; in addition there are two freights a week each way between Mazatlan and Nogales and three between Mazatlan and Guadalajara. North of Guaymas, passenger trains carry little freight except express and rush goods; they run promptly and, where conditions permit, keep pretty well to their maximum speed of 60 kilometers (37 miles) an hour. From Guaymas south they carry more general freight and at certain stations stop an hour or so for switching, but between stations their speed is the same as north of Guaymas. The traveler leaves Nogales at 7:30 p.m. and reaches Guadalajara at 2 p.m. on the third day, covering the 1,102 miles (1,772.3 kilometers) in 66½ hours. *

During the fruit and vegetable season, the company operates at least one extra freight train a day and sometimes two or three, the number varying with the crop, the market and climatic conditions, running from Los Mochis to Nogales on a fast schedule. Special trains are also run for other high class service, but there are no schedule fast freights, and there is no "manifest" freight service.

Locomotive and Other Equipment

The increase in equipment during the past several years, is shown herewith:

	1927	1926	1925	1924	1923
Locomotives Owned	96	85	83	74	63
Passenger Cars Owned	130	115	107	105	101
Freight and Service Cars Owned	1,520	1,515	1,140	1,154	1,247

A decline in the number of cars owned (as in 1924 and 1925) is not a serious matter, because the parent company interchanges freely with its Mexican subsidiary. The Southern Pacific of Mexico also interchanges cars with the Orient Railway and the Western Railway of Mexico. As these small companies have no cars to spare, they request them from the Southern Pacific when they have products to ship over it, and the Southern Pacific sends them commodities in its own cars. The company owns no tank cars except for water; oil and gasoline are brought in from the United States in private cars. In 1925, storage tanks for fuel oil were completed at Guaymas.

Photo by Hoag & Ford, Los Angeles.
The Growing of Sugar Cane is Increasing in Importance

Refrigerator cars belong to the Pacific Fruit Express. The company owns only one icing plant, which was built at Empalme at a cost of $250,000, but during the vegetable shipping season carload-lot storage is maintained at Cajeme, San Blas, Mazatlan, and sometimes at Ruiz. By carload-lot storage is meant the shipping of ice to the towns mentioned, where it is

* On February 15, a tri-weekly passenger service, with dining cars and standard Pullman equipment was established between Los Angeles, Cal., and Guadalajara, with direct connections for Mexico City. In addition, local trains with Pullman service are run three times a week between Nogales and Guadalajara, thus giving practically daily service on the West Coast.—EDITOR.

held in refrigerator cars until used for refrigeration purposes. On rare occasions, carloads of fruit and vegetables are re-sorted at Nogales, where a private plant was installed in 1922.

Passenger trains carry two classes of coaches as well as Pullmans. The bulk of the passengers, of course, are second-class. Pullman service, with standard drawing-room cars, was resumed about 1920-21 from Nogales to Mazatlan, and later was extended, first to Tepic and then to Guadalajara, the Guadalajara car running through from Los Angeles. Pullmans are quite popular with the Mexicans, who form 50 per cent or more of the passengers. Cafe service was begun about 1921-22, the original cafe cars being replaced by standard dining cars on the completion of the line into Guadalajara. The cars are owned by the Southern Pacific, but are leased to a firm in Nogales, Sonora.

Traffic Statistics for Recent Years

Results of operation in the calendar year 1925 were only slightly better than in 1924, but 1926 showed an encouraging increase in the results from revenue freight operations, although passenger operations showed little change. Tons carried increased 11.5 per cent over 1925 and 16.5 per cent over 1924. Ton-miles rose 15.2 per cent and 23.3 per cent over 1925 and 1924 respectively, while ton-miles per mile of road increased 20.6 per cent over 1925. The freight service was well managed, for the number of loaded cars per train was considerably greater, while freight train and locomotive miles increased only 6.8 and 5.8 per cent respectively over the preceding year, considerably less than the increase in revenue freight tonnage or ton-miles. The average distance carried was slightly greater than in either 1924 or 1925.

Photo by Hoag & Ford, Los Angeles.

Hermosillo is the Center of the Rich Sonora District

The opening of the entire main line in April, 1927, has greatly increased both passenger and freight traffic, as stated above, and, apart from temporary difficulties such as the recent Yaqui war, this should reduce the operating ratio considerably. In 1927 tons of revenue freight increased by 5.2 per cent and the average haul rose to 199.7 miles; accordingly ton-miles were 8.6 per cent larger, but ton miles per mile of road declined by 4.2 per cent. The increase in freight traffic was hampered by the Yaqui war and by the fact that the new section of road brought little additional business. These two factors account for the great addition in freight train miles and freight locomotive miles, respectively 29.7 and 30.2 per cent. Consequently gross tons per train and per locomotive declined, and the number of loaded cars per train declined also. Rev-

Photo by Hoag & Ford, Los Angeles.

A Rice Field in the Yaqui Valley

enue passengers traveled a considerably longer distance, their number rose by 14.8 per cent and the passenger miles by 42.4 per cent, or 30.2 per cent per mile of road, these increases being in proportion to the increase in passenger train and locomotive miles. Thus passenger traffic developed excellently; in part, however, this was an unhealthy growth, as many of the passengers were settlers who were abandoning their homes because of Indian raids.

What of the Future?

Today a completed trunk line with numerous feeders (several of which it owns) traverses the West Coast, linking Arizona with Mexico City. The railway system is now adequate and no extensive construction need be expected for a long time to come.

Unfortunately, at present prospects for the West Coast are dark because of the land laws with respect to foreigners and Mexico's hostility to foreign capital. The recent definite interpretations of the land laws prevent foreigners from holding lands within 100 kilometers (62 miles) of the frontier or 50 kilometers of the sea, and these forbidden zones include most of the fertile land; furthermore, a large percentage of the

Statistics of Operation†

	1927	Per Cent Increase	1926	Per Cent Increase	1925	Per Cent Increase	1924
Freight							
Freight train miles	841,534						
Freight locomotive miles	874,808	29.7	648,688	6.8	607,250	7.0	567,371
Tons carried, revenue freight	747,168	30.2	671,476	5.8	634,249	7.4	590.284
Tons carried, non-revenue freight	383,799	5.2	709,631	11.5	636,118	4.4	609,025
Ton miles, revenue freight	149,565,724	21.5	315,794	*9.2	348,051	18.7	293,206
Ton miles, non-revenue freight	65,311,185	8.6	137,650,195	15.2	119,437,150	7.0	111,631,993
Gross ton miles (cars and contents) of all freight	763,039,000	*19.9	81,517,804	0.06	81,465,837	14.5	71,099,561
Ton miles per mile of road, revenue freight	109,092	25.7	606,742,000	9.9	552,046,000	18.8	464,609,000
Loaded cars per train	14.62	*4.2	113,803	20.6	94,288	0.9	93,451
Gross tons per train (cars and contents) all freight	907		15.9		12.3		11.2
Gross tons per locomotive (cars and contents), all freight	872		935.3		909.1		818.9
Average distance carried revenue freight (miles)	199.7		903.6		870.4		787.1
Passenger			194.0		187.8		183.3
Passenger train miles	362,944	19.6	303,392	*8.3	330,961	17.8	280,841
Passenger locomotive miles	381,266	24.0	307,466	*8.0	334,576	17.4	284,979
Passengers carried, revenue	723,402	14.8	629,890	7.6	585,307	1.6	576,031
Passenger miles	65,995,932	42.4	46,334,022	*1.4	47,002,370	*3.2	48,567,094
Passenger miles per mile of road, revenue passengers	49,914	30.2	38,315	3.2	37,106	*8.7	40,657
Average distance carried, revenue passengers (miles)	91.2		73.6		80.3		84.3

* Decrease

† Statistics supplied by Southern Pacific of Mexico; Percentages computed by the writer.

shares of corporations owning land in Mexico must be held by Mexicans. Thus American immigration and development of the West Coast lands is stopped, and European immigration, although encouraged, is insignificant. The native population is small, and less than eight per cent is of pure white (mainly Spanish) blood. The people have little capital and show small capacity for business.

Until these conditions alter there can be but slight chance of much progress. The completion of the through line will give some stimulus to West Coast industries, but Mexico alone cannot do much to develop this rich region. However, the Southern Pacific's traffic will increase, and its net earnings should grow slowly, although hardly enough to yield any appreciable return upon the investment. Yet the railroad is there and must be maintained. The company will continue operations, awaiting some change in fundamental conditions which may eventually make this enterprise a success; that it shall become a success is as desirable for the West Coast and for the Mexican republic as for the railway. Fortunately, 1928 has seen a considerable improvement in Mexican conditions, and there is some reason to hope that the desired change may be at hand.

Report on Short Lane Collision

THE collision on the Pennsylvania Railroad on January 17, when both a northbound and a southbound passenger train were wrecked and five employees were killed, is recorded by the Interstate Commerce Commission as occurring at Short Lane, Md., 28 miles north of Baltimore (not Aberdeen as given in the press dispatches sent out at the time of the collision), and the report of W. R. Borland, director of the Bureau of Safety, has now been issued.

Northbound freight train extra 1472, consisting of 99 cars and a caboose, moving at about 12 to 15 miles an hour, was run into, during a dense fog, by a following passenger train, No. 412, moving at 45 miles an hour or faster; and the wreck caused the derailment of express train No. 121 on the southbound track, moving at about 60 miles an hour, which came on within a very few seconds after the collision. Five employees were killed—the flagman and one brakeman of the freight, the engineman of train 412 and the engineman and fireman of train 121; and 25 passengers, six mail clerks and seven employees were injured. The passenger train, No. 412, had run past cautionary and stop automatic signals set against it. The engineman was not instantly killed and was conversed with afterwards by the surviving fireman, but there is no explanation of his failure to observe the signals. He appeared to have been in good health.

Fireman Lee, of No. 412, admitted that he had not called the indications of all the automatic signals in the course of the preceding 20 miles, and he missed signal No. 690 which—no fault in the apparatus having been found—is held to have been showing caution for the block section occupied by the freight train. He finally crossed to the right side of the cab to see why the engineman had not called signals, but he was too late; he did not take this precaution until a moment before the collision. It appears that the engineman had neglected to call several signals and the fireman is censured for ignoring the rule requiring such calling of all signals. Fireman Lee had fired for this engineman at different times during ten years or more. The engine was still working steam at the moment of collision.

The freight had been side-tracked at Perryman, 1½ miles back, for train 124, and thereafter was allowed to proceed ahead of train 412, by the train dispatcher. The train dispatcher said at the hearing that he had not been informed by the operators at Perryman and Oakington (north of the point of collision) that there was a dense fog prevailing at the time. The fireman of the passenger train had seen no fusees; and no information is given concerning the possible use of this precaution, as a large number of burned-out fusees were found on the roadway.

Conclusions

The report holds that "the accident was caused primarily by atmospheric conditions which resulted in the failure of Engineman Sweeting of train No. 412 to properly observe signal indications." The fireman was censured, as before stated, but he is not mentioned in the first paragraph of the conclusions. It was found that, counting both northbound and southbound trains, this section of the road had been traversed by an average daily movement of 119 trains during the month preceding the date of the collision. In view of this large movement and the frequency of fogs at this place, due to the proximity of the shore of Chesapeake Bay, Mr. Borland holds that the road should give immediate consideration to the question of installing its cab signal system or automatic train control on this division. Reference is made to the recent report of the commission on the general subject of automatic train control, and to the paragraph in that report reminding railroads that they were not relieved from the responsibility to provide additional protection, where needed, in territory now equipped with automatic block signals. A statement is given showing that the Pennsylvania has 660 miles of road already equipped with automatic train stops, and 1370 locomotives; these including locomotives running on short sections of other roads.

The fact that the long freight train was occupying the main track on the time of passenger train No. 412, is not emphasized in the report as, according to the rules on this division, the right to the road given by the block signals may, under the approval of the dispatcher, be availed of, regardless of the relative superiority of trains.

THROUGH TRAFFIC between Calgary and Vancouver on the Canadian Pacific was interrupted from January 28 to February 17 because of the failure of the bridge over Surprise Creek at Cut Bank, B. C. A new steel bridge, about 200 ft. long was erected during a period when the temperature ranged from zero to 40 deg. below.

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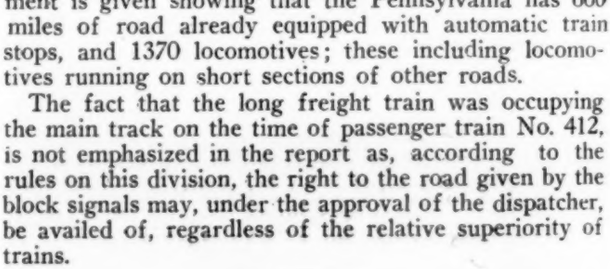


Atlantic Coast Line Photo

On the Atlantic Coast Line in Florida

Railway Consolidation Bill

Senate committee report describes need for amended legislation

WASHINGTON, D. C.

A COMPREHENSIVE report on the railway consolidation bill, S. 5817, outlining the defects found to exist in the present consolidation provisions of the transportation act and the necessity for new legislation on the subject, was submitted to the Senate on February 23 by Senator Simeon D. Fess, of Ohio, from the committee on interstate commerce. This committee had voted a favorable report on the bill on February 16. The report also includes a comparison with the provisions of the bill reported to the House last year by its committee on interstate and foreign commerce. Extracts from the report are as follows:

Policy of Railway Unifications

There are virtually no differences of opinion upon the basic question of policy involved in the bill. Everyone familiar with presentday railroad problems, either from the point of view of the carrier, the shipper, or the public, believes that the carriers and their properties should be consolidated into a limited number of strong, efficient, and well-balanced systems capable of giving the public the service it demands at rates reasonable to the carrier, the shipper, and the public; capable of being operated in a manner to promote the highest efficiency and to render the most dependable service; capable of assuring continued service to the communities that are dependent upon the railroads and of protecting the public that has invested in them; and capable of solving satisfactorily many of the perplexing transportation problems of the present and of meeting the problems of the future as new transportation conditions and necessities arise.

This policy has already been established by the Congress, has been recommended repeatedly by the President, and is endorsed by the Association of Railway Executives, representing primarily the strong carriers, the American Short Line Railroad Association, representing, as the name indicates, the smaller carriers, the National Industrial Traffic League, representing shippers throughout the country, and by economists, transportation experts, and various civic organizations. In addition, the Interstate Commerce Commission has for several years favored legislation along the general lines of that now proposed in order to more effectually carry out the policy and to improve the existing conditions.

In the course of the consideration of the subject by the committee during the sessions of the present Congress and in previous years, extensive public hearings have been held. Representatives of the various organizations above enumerated and others directly or indirectly interested in legislation affecting railroads have been heard. The committee has had the benefit of their testimony on many different aspects of the transportation problem. None of the persons who appeared and testified before the committee has expressed any opposition to the policy of voluntary unifications of railroads. On the contrary, the consensus of opinion seems to be that such a policy is desirable from the standpoint of the carriers, the shippers, and the public, as well as economically sound, but that additional legislation, which will permit that policy to be carried out effectively and properly, is necessary.

Necessity for the Legislation

In the administration of the existing law with respect to railway unifications certain difficulties have been encountered which were not contemplated at the time of the enactment of the transportation act of 1920. It has been discovered, for example, that the provisions which were intended to promote voluntary unifications of railroads, recognized by the Congress in 1920 as economically sound and desirable, have had an opposite tendency, due to the fact that some of the conditions imposed at that time were not sufficiently flexible to permit the congressional policy to become operative.

One of the chief obstacles to unifications since the enactment of the transportation act has been the provision imposing upon the Interstate Commerce Commission the duty of preparing and adopting a plan for the consolidation of the railway properties of the continental United States into a limited number of systems. While this provision, which now forms a part of paragraph 4 of section 5 of the interstate commerce act, was intended to form the basis for future unifications and to pave the way for unifications in harmony with the plan, the practical result has been just the opposite. The commisison has found it almost impossible to carry out fully the mandate of Congress. Although the commission did prepare a tentative plan in 1921 grouping into 19 systems the Class I carriers, it has never allocated to such systems upwards of 39,000 miles of railroad belonging to the Class II and Class III carriers which forms an important part of the total railway mileage in the United States and it is extremely doubtful whether such an allocation would, if made, serve any very useful purpose. Other obstacles to the completion of the commission's plan are the necessity of making the systems of approximately equal earning power with relation to the values of their properties and of preserving competition "as fully as possible." The railroads, in the absence of the complete plan of the commission, have been unable to proceed with effective regroupings of their properties in the manner contemplated by the Congress at the time of the enactment of the transportation act, and the public has failed to realize the benefits that might reasonably be expected from unifications. There is thus in the present law a clearly expressed desire on the part of the Congress to accomplish a certain result, but an effective method of accomplishing the result is lacking.

Your committee is of the opinion that legislation is necessary in order to remove the uncertainty that surrounds the whole question of railway unifications and to provide a more definite and workable basis for future unifications that will be in the public interest. This opinion is shared by both the Republican and the Democratic members of the committee. Considerable time has been devoted to the discussion and consideration of the various problems involved, and the policies incorporated in the bill have been decided upon only after

careful and painstaking study on the part of the members of the committee of the different aspects of the railway unification problem. In all its deliberations the committee has been primarily concerned with the proper and adequate protection of the public interest, and under the provisions of the bill no unifications are to be permitted except those that are determined by the Interstate Commerce Commission to be in the public interest. For the guidance of the commission in making its determinations, definite and clear-cut standards and methods of procedure have been laid down.

Defects of Existing Law

During the period of more than eight years that the provisions of existing law with respect to railway unifications have been in force, very little has been accomplished in the way of carrying out the policy adopted by the Congress. Experience has shown that none of those provisions, with the exception of paragraph 2 of section 5, is capable of effective administration and application. Some of the outstanding defects of the existing law are as follows:

1. Paragraph 2 of section 5 was intended to be applicable only in the cases of acquisitions of control by one carrier of another carrier (through stock ownership or lease) which do not involve a true or substantial unification contemplated by the transportation act. Accordingly, its provisions are wholly inadequate as a means of bringing about such unifications not only from the point of view of the carriers desiring to effectuate the congressional policy of voluntary consolidations, but also from the point of view of the supervision and control by the commission, the protection of minority interests and the interests of other carriers, and, what is of primary importance, the protection and promotion of the interests of the public.

2. The unifications contemplated by the Congress at the time of the enactment of the existing law can not be brought about, for the commission has found it impossible to comply fully with the requirements that it prepare a complete plan for the consolidation of all the railway properties in the United States into a limited number of systems, and the completion of the plan is a prerequisite to the approval of any such unification.

3. Only one type of unification is provided for, namely, a corporate consolidation into one corporation for ownership, management, and operation of the properties of the carriers that are parties to the unification.

4. No provision is made for a procedure under Federal law to be followed by the carriers in bringing about a proposed unification.

5. Unifications under State law are not prohibited.

6. The requirement that the securities of the new corporations shall not exceed the value of the properties sought to be consolidated as ascertained by the commission under secton 19a is a condition which has materially hindered the commission in its preparation of its complete plan.

7. No provision is made for determining the rights and remedies of dissenting stockholders or of the carriers who are not originally joined in a proposed consolidation.

8. Inadequate provision is made for safeguarding the interests of the public.

Outline of the Bill

The main purposes of the bill are as follows:

(1) To authorize voluntary railroad unifications, but only to the extent that they promote the public interest.

(2) To set up definite and specific standards to be taken into consideration by the Interstate Commerce Commission in determining whether or not a proposed unification will promote the public interest.

(3) To enable the carriers to carry into effect such a unification which has been approved by the commission by establishing a uniform and effective procedure.

(4) To safeguard the interests of all who might be directly or substantially affected by such a unification, especially carriers that are not originally joined in the plan of unification.

(5) To establish an efficient system of supervision by the commission in all cases of proposed unifications.

(6) To provide adequate protection for all dissenting stockholders of the carriers who are parties to a proposed unification by establishing a procedure whereby they may receive just compensation for their stock.

(7) To remove the defects of existing law which have prevented the promotion of the policy of voluntary unifications.

(8) To relieve the commission of the duty of preparing a complete plan for the unification into a limited number of systems of all the railway properties in the continental United States and to substitute a provision directing the commission to make a study of transportation facilities and to prepare one or more tentative plans to be available for its use in passing upon petitions.

(9) To permit the commission under certain circumstances to authorize the acquisition by condemnation of a carrier which was not a party to the plan if the commission determines that it is in the public interest that such carrier be made a party to a unification.

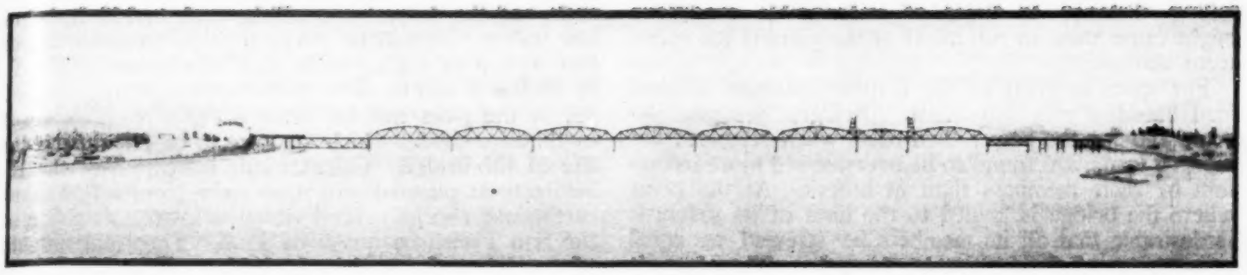
(10) To prohibit all unifications, including consolidations, mergers, acquisitions of properties, and acquisitions of securities, under State or Federal law, except as specifically provided in the bill.

(11) To provide appropriate relief from State and Federal taxation in order to encourage and make possible unifications that will be in the public interest.

The bill which your committee is now reporting out and the bill (H. R. 12620) reported out near the end of the last session by the House committee are identical in almost all respects. There are, however, six substantial differences between the two bills. The first of these relates to the method of acquiring securities; the second, to the type of corporate consolidation to be permitted; the third, to the provisions to be made with respect to voting bonds; the fourth, to the proceedings under paragraph 2 of section 5; the fifth, to carriers not parties to a plan of unification; and the sixth, to the preparation by the commission of a unification plan.

* * *

On the Boston & Albany at Albany, N. Y.



An Artist's Conception of the New Bridge

Suisun Bay Bridge to Improve San Francisco Service*

Will eliminate delays to Southern Pacific trains incident to use of ferries across Carquinez straits

By C. R. Harding
Engineer of Standards, Southern Pacific Lines,
San Francisco, Cal.

THE Southern Pacific is building a double-track bridge across Suisun bay at a cost of $12,000,000 to replace its train ferry between Port Costa, Cal. and Benicia. Since 1879, trains between Oakland and Sacramento have been ferried across the straits of Carquinez, about thirty miles northeast of San Francisco. The straits of Carquinez connect Suisun bay and San Pablo bay, and form the outlet for the Sacramento and San Joaquin rivers which drain the great central valleys of California.

The bridge across Suisun bay that will replace the train ferry has been located some two miles farther east, and will cross from Army Point to Suisun Point within the limits of the City of Martinez. It is a natural bridge site, affording supported roadbed at each approach. No live earthquake faults cross the line of the bridge.

The navigable channel passing into and through Suisun bay begins at this point, so there is no need for sea-going steamships to pass the bridge except at the one point entering the channel. This avoids the need of a very high bridge that could pass ocean steamships anywhere, as would naturally have to be provided by any crossing of Carquinez straits, which has deep water for its entire width.

Nature of the Approaches

The north approach on the Benicia side, from Goodyear to Army Point, will consist of divergent double track, the westbound track approaching the bridge on a 0.45 per cent grade, compensated for curvature, with three degrees maximum curvature except immediately adjacent to the bridge where slower movement of trains permits a four-degree curve. This will allow the use of the same power as at present between Oakland and Sacramento, as the existing ruling grade is 0.41 per cent. The eastbound track will leave the north end of the bridge on a four-degree curve on the side of a bluff and descend on a 2.2 per cent grade, compensated for curvature, to the level of the present tracks with which it will connect.

At the south approach, conditions are not so favorable. It would have been desirable to have a 0.45 per cent ascending grade from the south, but this is impossible because of the nearness of improved property in the City of Martinez. The ruling grade of the south approach, therefore, will be one per cent, compensated with three-degrees maximum curvature.

A 14-car passenger train, hauled by the locomotives now used, if brought to a stop by signal governing the approach to the movable span, cannot start on a one-per cent grade. In order to overcome this, a 0.6 per cent grade has been introduced immediately ahead of the signal of sufficient length so that a 14-car passenger train may start without difficulty. It will be necessary to use a helper engine for tonnage freight trains on this one-per cent grade, but this is not so objectionable on the south side as it would have been on the north side because extensive switching service is now required to serve the large industries of Martinez.

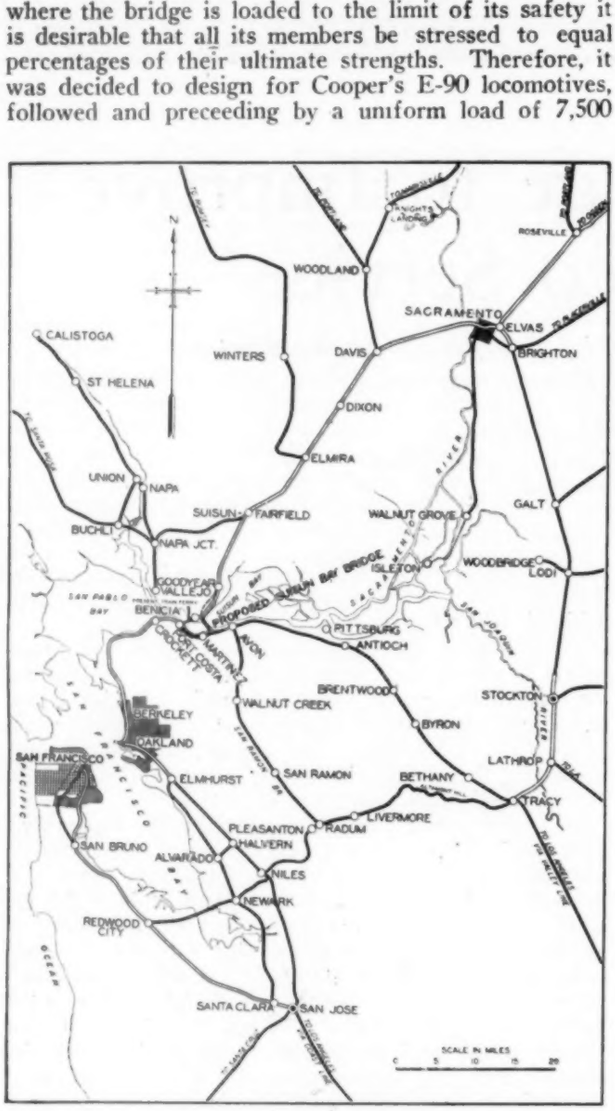
Two train ferryboats, the "Solano" and "Contra Costa", have been available for the transfer of trains across the Straits. The older of these two boats the "Solano", is remarkable for its great age of 50 years, during which time many increases in the weights of units of equipment have taken place. The capacity of each train ferryboat is two locomotives and 36 freight cars, or two locomotives and 24 passenger cars.

Suisun Bay bridge will afford 70 ft. of underclearance for substantially its entire length, which is sufficient to pass river steamboats, barge tows, tugboats, and the like. A lift span, located at the channel, will accommodate the larger vessels, giving 300 ft. of horizontal clearance and 135 ft. of vertical clearance above mean high water. The fixed spans affording 70 ft. of underclearance, will have a length of 526 ft. This is somewhat greater than the economic span length but was adopted to make provision for long barge tows whose

*A paper presented before the convention of the American Railway Engineering Association at Chicago on March 5, 1929.

tailing distance in times of unfavorable conditions might cause them to run afoul of the piers if the spans were shorter.

For spans as great as 526 ft., the influence of live load becomes very important. Bridges designed 40 years ago for the power then used, when refigured for modern loads, are found to be overstressed more in certain of their members than in others. At the point where the bridge is loaded to the limit of its safety it is desirable that all its members be stressed to equal percentages of their ultimate strengths. Therefore, it was decided to design for Cooper's E-90 locomotives, followed and preceeding by a uniform load of 7,500



Relation of the Proposed Bridge to the Southern Pacific Lines in Central California

ib. per lin. ft. of track, with unit stresses one-third higher than those usually used. By this method, the bridge will vary but slightly in weight from one designed for our standard loading of E-60, but there will be a considerable difference in the distribution of metal in the various members. When this bridge is called upon to carry loads about fifty per cent greater than at present, none of its members will be overstressed more than any other, nor beyond the limits of safety. Silicon steel will be used for all members fabricated from shapes, and the tension members will be composed of heat-treated eyebars. The estimated weight of steel is 42,000,000 lb.

The borings show rock to be on an average of about 120 ft. below low water. The piers will rest upon bed rock, and the deepest one will be sunk to 143 ft. below low water. It will be 214½ ft. high from bottom of pier to top of coping with base dimensions of 38 ft. by 60 ft. It will be sunk by the open dredging method. All of the piers will be heavily reinforced to resist earthquake shocks which are sure to be felt during the life of the bridge. Calculcations indicate that the reinforcement planned will render the piers safe against earthquake shocks several times as intense as those of the San Francisco quake of 1906. The total amount of concrete to be used in the bridge will be 120,500 cu. yd.

The primary reason for the construction of the bridge at this time is that the two existing car ferries have about reached the end of their lives. Repairs to the hulls, being of wood, have been difficult and expensive. The cost of repairs in 1926 amounted to 28 per cent of the entire first cost of the boats. For a period of six years, the average cost of maintaining the "Solano" was $40,000 a year, and $45,000 for the "Contra Costa". Even with these expensive repairs it is difficult to maintain a condition of sea-worthiness that will pass the very rigid government inspection. If the bridge were not built now, it would be necessary not only to replace these car ferries with new ones, but, on account of the increase in traffic, it would be necessary to provide a third ferryboat with additional slips and incidental facilities. The number of passenger cars handled has increased from 72,000 in 1911 to 93,000 in 1926, or 30 per cent in 15 years. The number of freight cars handled increased from 94,000 in 1911 to 142,000 in 1926, or 52 per cent. Corresponding increases of traffic are expected in the future; hence the third boat would be absolutely essential to take care of the business during peak traffic and to provide relief when one of the boats is out of service for repairs.

Will Expedite Traffic

The car ferry service between Port Costa and Benicia constitutes a "bottle neck" which has prevented the advantageous use of the double-track, water-level line between Oakland and Sacramento, and has resulted in the diversion of traffic to less favorable routes. It has been a hindrance to movements of freight and passenger trains because of delays as well as the limited capacity of the ferryboats. A considerable tonnage will move via the bridge that is now handled via Tracy and Lathrop, a route which not only involves the crossing over the Altamont summit at Elevation 750, but is also more devious. Freight from Sacramento to Oakland, some of which is now of necessity routed via Altamont hill, will be routed in the future via the bridge with a saving of 46.6 miles of distance, 785 ft. of adverse grades, and 2,587 deg. of curvature.

The average time required to ferry a passenger train across the straits is 30 min. Considering the added length of line and the restricted speed, it is estimated that passenger train schedules via the bridge will be reduced 10 min., but there will be great additional advantage in that train schedules will not be disrupted by frequent delays at the ferry. The actual time saved will probably average as much as 30 min. because, in the course of a year, there are delays due to fog about one day in every three. The saving in time for the crossing of freight trains will be far greater, as it now takes about two and a half hours to ferry a freight train, and freight train schedules via the bridge should be about two hours less.

The savings credited to construction of this bridge consist of the elimination of the maintenance and operating costs of the ferries and slips, the reduction of

yard expenses that will go with the elimination of the breaking up and remaking of trains at the ferry, and the re-routing of traffic to get the maximum benefit of the water-level, double-track line from Oakland to Sacramento. The total credit to the bridge is estimated at $1,400,000 a year. However, after paying the operating, maintenance and carrying charges on the bridge, there will be a little to spare, but hardly more than would be earned by investing an equivalent sum of money in government securities. The Southern Pacific is building the bridge, therefore, to give better service to the public by replacing an antiquated plant with a modern facility.

Construction has just begun, and it is expected that the bridge will be in operation in the fall of 1931.

Congress Adjourns Without Railroad Legislation

WASHINGTON, D. C.

THE Seventieth Congress adjourned on March 4 without having accomplished anything in the way of general railroad legislation and leaving the railroad consolidation bill, on which a great deal of work had been done and which had reached the stage of having been favorably reported by both House and Senate committees, for further consideration at another session. This undoubtedly means another regular session because it is the intention to confine the forthcoming special session to agricultural relief and tariff legislation.

Many hearings were held on bills relating to transportation during the Seventieth Congress, but very few of them reached the stage of discussion on the floor. The Pullman surcharge bill was scarcely heard of during the session just closed, and the bill to relieve short lines from recapture, although passed by the Senate, encountered difficulties in the House committee.

The bill urged by the Interstate Commerce Commission to authorize it to delegate powers to individual commissioners or subordinates was one not acted upon.

All bills not acted upon expired with the adjournment of Congress, to receive further consideration, will have to be introduced again.

Congress also failed to take any action toward providing a plan of regulation for interstate motor vehicle transportation. The House committee on interstate and foreign commerce held extensive hearings on bills introduced by Chairman Parker, which had been drafted by representatives of the organizations interested in such legislation, following which conferences were held in an effort to reconcile the differences. The committee then held several executive sessions to discuss the bill but there was sufficient opposition in the committee to defer action until another session.

The bill directing the Attorney General to institute court proceedings relating to the adjustment of disputed claims between the government and the Northern Pacific as to the adjustment of its land grants was passed by the House on February 27, but failed of passage in the Senate. The bill also provided that lands within the indemnity limits of the grants which on June 5, 1924, were embraced within national forests or other government reservations shall be removed from the operation of the grants but that the company shall receive compensation therefor.

The Senate on February 26 passed a bill, S. 3623, to amend Section 204 of the interstate commerce act so as to permit a review by a federal district court of claims of short line railroads for reimbursement of deficits for the period of federal control, involving dispute as to the date when they were to be regarded as having been taken under government control. In some cases the Interstate Commerce Commission and the Director General of Railroads failed to agree on the date and it was proposed to conduct a test case. However, the House committee, to which the bill was referred, tabled it without any action.

The Senate failed to act in the confirmation of the re-appointment of Pat M. Neff as a member of the United States Board of Mediation.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended February 23 amounted to 907,337 cars, an increase of 37,920 cars as compared with loading in the corresponding week of last year and a decrease of 11,521 cars as compared with 1927. Heavier loading of coal and miscellaneous freight was chiefly responsible for the increase in the total over a year ago. The decrease, as compared with the corresponding week of 1927, was due principally to smaller totals for forest products, live stock and less-than-carload merchandise. Loading in the Northwestern and Southern districts was smaller than last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, February 23, 1929

Districts	1929	1928	1927
Eastern	211,830	195,328	208,100
Allegheny	181,542	170,434	186,487
Pocahontas	59,776	51,843	56,664
Southern	141,451	143,104	153,745
Northwestern	103,206	111,048	110,692
Central Western	136,079	130,669	129,213
Southwestern	73,453	66,991	73,957
Total West. Dists.	312,738	308,708	313,862
Total All Roads	907,337	869,417	918,858
Commodities			
Grain and Grain Products	43,918	46,079	43,187
Live Stock	23,767	30,253	27,485
Coal	203,685	173,462	201,757
Coke	13,740	11,370	12,300
Forest Products	60,311	65,115	67,796
Ore	9,362	7,572	9,624
Mdse. L. C. L.	226,630	225,890	232,509
Miscellaneous	325,924	309,676	324,200
February 23	907,337	869,417	918,858
February 16	958,051	888,586	954,794
February 9	955,478	906,477	962,602
February 2	946,892	926,262	965,664
January 26	926,188	902,664	943,879
Cumulative total, 8 weeks	7,338,736	7,039,637	7,558,578

The freight car surplus during the period ended February 15 amounted to 229,573 cars, as compared with 245,907 cars on February 8. The total included 108,768 box cars, 75,010 coal cars, 24,357 stock cars and 10,217 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 23 totalled 65,529 cars, an increase over the previous week of 13 cars and an increase over the same week last year of 4,407 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 23, 1929	65,529	46,466
February 16, 1929	65,516	45,654
February 9, 1929	64,048	46,441
February 25, 1928	61,122	39,249
Cumulative Totals for Canada		
February 23, 1929	476,840	328,292
February 25, 1928	499,902	302,178
February 26, 1927	475,482	296,208

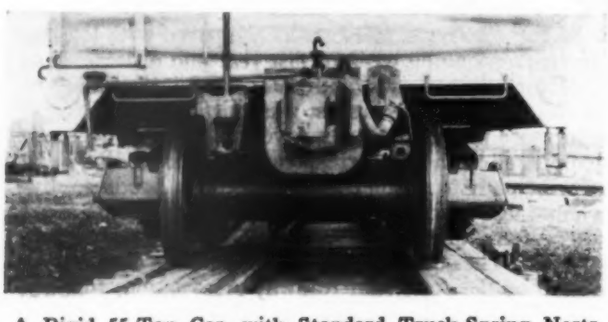
Freight Car Truck Springs

They are of no importance in equalizing the weight at the four corners of a rigid car—Their function to eliminate shocks discussed

By T. H. Symington

IT has generally been believed that freight car truck springs have two important functions: (1) To equalize the load on the rails at the four corners of rigid-body cars when the track is warped or otherwise out of surface, and (2) to prevent dynamic shocks on the rails and give the car a smooth ride. Additional research at Baltimore has shown that the first of these functions is not accomplished by the truck springs.

The first photograph speaks for itself. The perfectly



A Rigid 55-Ton Car, with Standard Truck-Spring Nests, Derailing on a 10-Deg. Curve

Load, 18 tons; roller side bearing clearance, ⅛ in.; A. R. A. standard bolster—Outer rail (at the right) depressed 2¾ in.—Load on derailed wheel about 15 per cent of normal

calibrated A.R.A. 55-ton standard truck-spring nests with 1-11/16 in. travel all measured 8⅛ in. high when the car stood on level track. It will be noted that the outside front wheel of the forward truck has mounted the rail when entering a 10-deg. curve at a point where the rail depression caused a track warp of 2¾ in. between truck centers.

The four truck spring nests were then removed and replaced with wood blocks 8⅛ in. high. The second photograph shows the car with wood blocks in place of springs in the same curve, with the same wheel mounted at a point where the rail depression caused a track warp of 2-9/16 in. between truck centers.

It is obvious that truck spring travel plays a very small part in preventing the unloading of wheels of rigid body cars with resulting derailments on warped track. We are, therefore, dependent on the cross equalization obtained by side-bearing clearance for this important function in rigid cars.

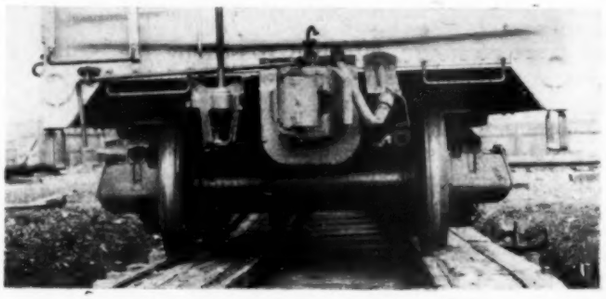
With respect to the function of truck springs to prevent dynamic shocks, it is well known that permanent set in the spring or car-body roll will often account for a solid spring and that car-body roll is sometimes sufficient to lift the wheels off the rail.

It is a simple matter to figure the amount of dynamic shock on rails, axles, side frames and springs when cars are moving at speed. Fig. 1 shows a very frequent truck condition on 55-ton cars when fully loaded. Car-body roll may put the resultant load center anywhere from a corner of the center plate 6 in. from the center of the bolster to the outer edge of one side bearing 27 in. from the center of the bolster. When one truck spring goes solid from car roll, the body load is *always* entirely on the adjacent side bearing at the instant of spring closure, or 25 in. from the center of the bolster.

Referring to Fig. 2, car-body roll may cause this truck spring to go solid when the leading truck of the car has reached the position shown. The force to accelerate one-half the truck vertically has already been expended, but at this point one end of the entire car body must have its velocity direction at the side bearing suddenly reversed.

If there were absolute rigidity of track, truck and car structures, this force to reverse the velocity direction of the car-body end would reach infinity. We know that no such condition exists; there is no such thing as absolute rigidity. If we assume that the car moves a certain distance on the rails before the final upward acceleration of the car-body end is attained, we can calculate the dynamic force needed to give this load its acceleration.

Refer again to Fig. 1. The weight of one end of a fully-loaded 55-ton car body, including the truck bolster, equals 76,000 lb. With the resultant load center 25 in. from the center of the bolster, about 82.5 per cent of this body load is on one side frame and about 17.5 per cent is on the other. The load on one spring is then 62,413 lb. and on the other, 13,587 lb. The



A Rigid 55-Ton Car, with Wood Blocks in Place of Spring Nests, Derailing on a 10-Deg. Curve

Load, 18 tons; roller side bearing clearance, ⅛ in.; A. R. A. standard bolster—Outer rail (at the right) depressed 2-9/16 in.—Load on derailed wheel about 15 per cent of normal

heavy load on a Class D truck spring leaves a very small remaining travel in this spring. It is certain that occasionally when the two wheels have reached the position shown in Fig. 2, the cycle of rolling car-body action is not completed. As the normal cycle rate of car-body roll is about 50 per min., the car-body rolls from one extreme position to the other in six-tenths of a second, and it is not unreasonable to assume a downward velocity of the car body at the side bearing of 1.5 in. per sec. at the instant of spring closure. This velocity of 1.5 per sec. at the side bearing is equivalent to a velocity of 9 in. per sec. at the wheels.

At 41 miles per hour a car moves 10 ft. in one-sixth of a second, and, with an incline on one rail of ½ in. in 10 ft. which is not unusual on main-line tangent

track in rising out of long soft spots, the load must then be lifted ½ in. in one-sixth of a second, or at the rate of 3 in. per sec.

To calculate the load on the side frame, we must know how far the car moves on the rails before the vertical velocity of ¼ ft. per sec. is attained. Assuming that this distance is ¾ in., the time of the reaction is 1/960 of a second and the total yield in track, truck and car structures is .003125 in. It is then evident that the downward velocity of the car-body end at the side bearing of 1½ in. per sec. is changed to the upward velocity at the side bearing, resulting from an upward velocity of 3 in. per sec. at the wheels in this interval of time and space. It is now a matter of simple physics to calculate the pounds of load on the side frame at the instant of spring closure. This load we will call F. Then

$$F = \frac{\frac{A}{D}(I_b + M_bE^2) + F_1X + (W_c + [M_cA\frac{C}{D}y])C}{D} + \frac{W_b}{2} = 180{,}000 \text{ lb.}$$

In this formula

A = the equivalent vertical acceleration at the side frame.
D = the lever arm of the force about the axis of rotation of the entire mass (point P).
I_b = the moment of inertia of the bolster about its center of gravity.
M_b = the mass of the bolster.
E = the distance between the center of gravity and the axis of rotation of the whole mass.
F_1 = the spring reaction resulting from car-body weight at the active spring center.
X = the lever arm from the axis of rotation of the whole mass to the center of the active spring.
P = the axis of rotation of the entire mass above the springs (see Fig. 1).
W_c = the weight of one end of the car body on the bolster.
M_c = the mass of the weight W_c.
C = the lever arm from the axis of rotation of the whole mass to the center of the side bearing in contact.
Y = a factor closely approximating 1, which is the ratio of the force needed at the side bearing to accelerate the car body concentrated at its center of gravity, to a similar force, if the center of gravity were directly over the side bearing.

The only difficult factor to establish in this problem is the location of P, the axis of rotation of the entire mass. We know that this axis of rotation is at the point that will require the smallest force to accelerate the car body. By assuming a number of points as this axis of rotation, we select the true point by the process of elimination.

This calculated side-frame load of 180,000 lb. on rails, wheels, axles, side frames and truck springs would quickly destroy them. It is obvious that we have the protection of more yield in track, truck and car structures, which increases the time element of the reaction and greatly reduces the accelerating force.

Fig. 3 shows this momentary load on the side frame in a plotted curve, with the time factor in which the velocity change is accomplished doubled six times. As the time factor is increased, of course, the yield factor in track, truck and car structures is increased, but it should be realized that the known resilience in track cannot fully function in the small fraction of a second in which the reaction occurs.

If the incline on one rail were 1 in. in 10 ft., the dynamic factor in the above loads would be increased 25 per cent. If the action occurred on perfectly level track at any speed of the train and the downward velocity of the car-body end at the side bearing were 3 in. per sec. at the instant of spring closure, the dynamic factor in the above figures would be increased 50 per cent. It may frequently happen that this reaction takes place on a frozen roadbed with minimum yield.

As synchronous car-body roll reaches a maximum at 15 to 18 m.p.h., it is probable that the most destructive shocks on rails and side frames result entirely from the downward velocity of the car body at the side bearing

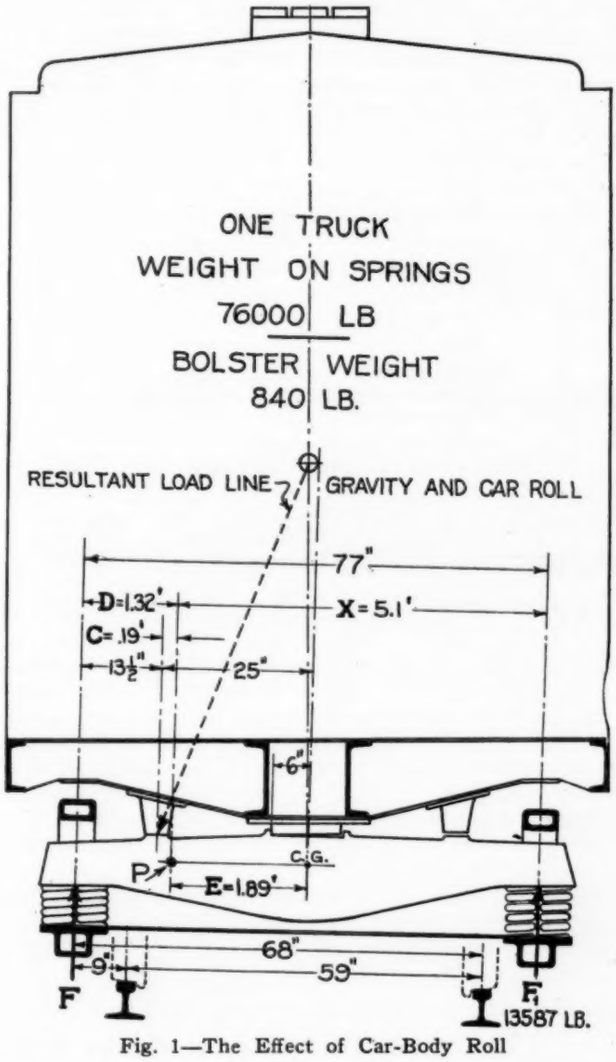


Fig. 1—The Effect of Car-Body Roll

at the instant of spring closure. It is, therefore, probable that the largest factor in destructive shocks on rails and side frames results from the downward velocity of the car body at the side bearing at the instant of spring closure, and the very great importance of eliminating car-body roll is obvious.

With rigid cast-steel bolsters and ever-increasing rigidity of roadbed, particularly when frozen, most of any yield must come on any weak side frame, and as

Table I—Momentary Loads on Side Frames and Rails with Varying Amounts of Yield in Track and Side Frames—55-Ton Fully Loaded Cars

Total yield, in.	.003125	.00625	.0125	.025	.05	.1	.2
Time of action, sec.	1/960	1/480	1/240	1/120	1/60	1/30	1/15
Distance traveled, in.	¾	1½	3	6	12	24	48
Load on one side frame, lb.	180,000	141,000	101,000	80,800	70,400	64,800	62,800
Load on one wheel, lb.	105,479	83,004	59,953	48,312	42,319	39,092	37,939
Load on rail on one 58-in. driver for equivalent rail-bearing stress, lb.	185,387	145,885	105,372	84,912	74,378	68,707	66,680

The dynamic factor in the above loads may occasionally be 50 per cent greater.

the load must sometimes exceed the elastic limit of an archbar side frame, it is not surprising that failures of such side frames occur, particularly with the soft action of A.R.A. springs with 1-11/16 in. travel.

The curve in Fig. 3 gives the total pounds of load on the side frame with varying amounts of yield. It should be realized that occasionally the yield in track may be a minimum, that occasionally the car may encounter at speed a steeper incline than ½ in. in 10 ft., and that occasionally truck springs may go solid when there is a downward velocity of the car body at the side bearing in excess of 1½ per sec. An occasional combination of these conditions will certainly result in an occasional stress sufficiently high to account for a service failure of rail or side frame.

The total dynamic load on the rail is always 15 per cent greater than the dynamic load on the side frame, if the opposite wheels have not lifted, because the lever arms are in the ratio of 59 to 68. To get the true load on the rails, we must add to this 15 per cent greater dynamic load one-half of the truck weight under the springs. We do not add the force needed to accelerate

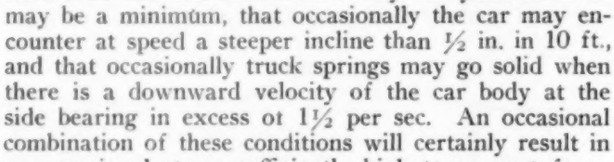

CAR MOVING 41 M.P.H.
55 TON CAR FULLY LOADED.
TOTAL WEIGHT ON SPRINGS 152000 LB.
SPRING SOLID
WITH CAR BODY ROLLING AT A
VELOCITY OF 1½" PER SECOND
AT THE SIDE BEARING
INCLINE ½" IN 10'
ON ONE RAIL

Fig. 2—A Combination of Car-Body Roll and Vertical Acceleration of the Truck

one-half of the truck vertically because this force has already been expended before the heavy dynamic load is applied.

Table I gives the actual momentary load on the side frame and between one wheel and the rail, with varying amounts of yield up to .2 in. equivalent at the rail. This table also gives the loads on the rail from a 58-in. locomotive driving wheel to produce an equivalent bearing stress in the rail.

The importance of maintaining ample reserve truck spring travel *under* the load at all times is obvious. This ample travel under the load may be insured by minimizing car-body roll in some way.

Tables II and III give the remaining static spring travel *under* and also *absorbed by* the load on 55- and 70-ton cars when various spring groups are loaded to capacity of 38,000 lb. for 55-ton cars and 47,500 lb. for 70-ton cars. A spring grouping with coils having 2 in. travel is suggested for the well-known Dalman and Symington trucks to give what would seem to be the most desirable travel both *under* and *over* the loaded car position, for minimum concussion.

The numbers 1, 2, 3, etc., give the rating of different spring groups for shock protection, which is based on the foot-pound capacity of the spring group. The letters A, B, C, etc., give the rating of these spring groups for minimum concussion, which is based on the flatness

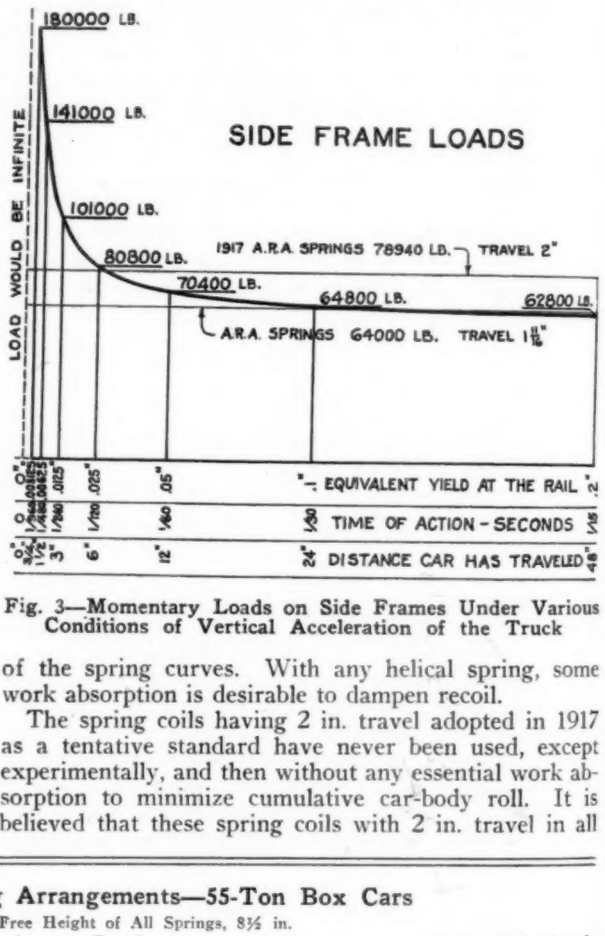


Fig. 3—Momentary Loads on Side Frames Under Various Conditions of Vertical Acceleration of the Truck

of the spring curves. With any helical spring, some work absorption is desirable to dampen recoil.

The spring coils having 2 in. travel adopted in 1917 as a tentative standard have never been used, except experimentally, and then without any essential work absorption to minimize cumulative car-body roll. It is believed that these spring coils with 2 in. travel in all

Table II—Ratings of Various Spring Arrangements—55-Ton Box Cars

Load on One Spring Nest, 38,000 lb.—Free Height of All Springs, 8½ in.

	No. of outside coils	No. of inside coils	Total travel, in.	Travel remaining under the load, in.	Travel absorbed by the load, in.	Total capacity, lb.	Ft.-lb. of spring capacity	Rating for shock protection	Rating based on flatness of curve for smooth transportation
A. R. A. Class D existing coils..	4	4	1-11/16	11/16	1	64,000	4,480	4	A
A. R. A. Class N 1917 coils....	4	4	2	1- 1/32	31/32	78,940	6,580	1	A
Norfolk & Western.....	4	4	1- 3/8	27/32	17/32	100,000	5,730	3	D
Dalman-Symington, existing coils	6	4	1-11/16	15/16	3/4	89,000	6,230	2	C
Dalman-Symington, 1917 coils...	6	0	2	1- 3/16	13/16	92,850	7,739	1*	B

* Spring absorption in excess of 6,580 ft.-lb. not needed.

Table III—Ratings of Various Spring Arrangements—70-Ton Coal Cars

Load on One Spring Nest, 47,500 lb.—Free Height of All Springs, 8½ in.

	No. of outside coils	No. of inside coils	Total travel, in.	Travel remaining under the load, in.	Travel absorbed by the load, in.	Total capacity, lb.	Ft.-lb. of spring capacity	Rating for shock protection	Rating based on flatness of curve for smooth transportation
A. R. A. Class H existing coils..	5	5	1-11/16	11/16	1	80,000	5,600	4	A
A. R. A. Class O 1917 coils....	5	5	2	1- 1/32	31/32	98,675	8,225	1	A
A. R. A. existing coils.....	6	6	1-11/16	27/32	27/32	96,000	6,720	3	B
A. R. A. 1917 coils.....	6	2	2	1- 1/16	15/16	101,370	8,449	1	A
Norfolk & Western.....	5	5	1- 3/8	27/32	17/32	125,000	7,162	3	D
Dalman-Symington, existing coils	7	7	1-11/16	31/32	23/32	112,000	7,840	2	C
Dalman-Symington, 1917 coils...	7	0	2	1- 1/8	7/8	108,325	9,028	1*	B

* Spring absorption in excess of 8,225 ft.-lb. not needed.

A.R.A. spring nests will have a longer life in service than the spring coils with 1-11/16 in. travel, if cumulative car-body roll is minimized, although the fibre stress at closure is 100,000 lb. for the 2-in.-travel coil and only 80,000 lb. for the 1-11/16-in.-travel coil. The reasons for this belief are:

1—The ordinary working stress of the two spring coils is the same.

2—The 2-in. travel coil will never go solid when cumulative car-body roll is minimized and the 100,000-lb. stress will never be reached.

3—The 1-11/16-in.-travel coil is often closed solid and the fibre stress at some point in the coil may then run far in excess of 100,000 lb.

Cumulative car-body roll with 2-in. travel spring coils can be minimized in a number of ways. There are at least six manufacturers today who are offering work-absorption means for this purpose. As soon as the need for long-travel springs is fully realized, there will be many additional means available for this purpose.

It is interesting to note that a 2-in. travel spring coil has been a Baltimore & Ohio standard for a great many years, but has always been used in conjunction with the well-known Barber lateral motion device which apparently provides sufficient work absorption to break up excessive cumulative car-body roll. It is a significant fact that the Baltimore & Ohio has consistently endorsed the arch-bar side frame and the only possible reason can be that they have experienced no particular difficulty with the arch-bar side frame on their cars.

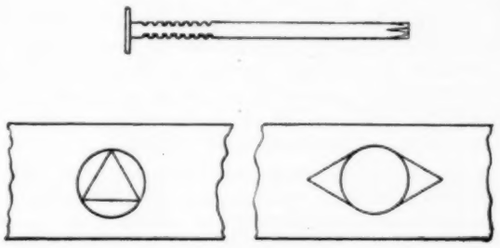
As 70-ton coal cars are not moved at very high speed and as a smooth ride is not essential for coal traffic, ample reserve spring travel *under* the load with minimum body roll would seem to be satisfactory.

As 55-ton box cars are moved at high speeds and often handle very perishable freight, ample spring travel both *above* and *below* loaded car position with some work absorption and minimum body roll would seem to be desirable.

As oscillation and concussion have been estimated by Wellington as responsible for an increased train resistance of 8 lb. per ton at 40 m.p.h., the dynamometer car may show that in order to reduce concussion and resulting train resistance, all freight cars should have ample spring travel both above and below the loaded car position, with adequate work absorption and minimum body roll.

Stronach Non-Splitting Nails

THE two principal features of a patented nail recently placed on the market by the Stronach Nail Company, Union Bank Building, Pittsburgh, Pa., are that it is non-splitting and has increased holding power. When a pointed nail is driven into a board, the point spreads the fibers of the wood and wedges them apart. This tends to split the board. The Stronach nail does not work on this principle, but is designed to distribute the pressure around the circumference of the nail and not in two directions only, as is the case when a pointed nail is used. The triangular section at the end of the Stronach nail cuts the wood fibers and punches

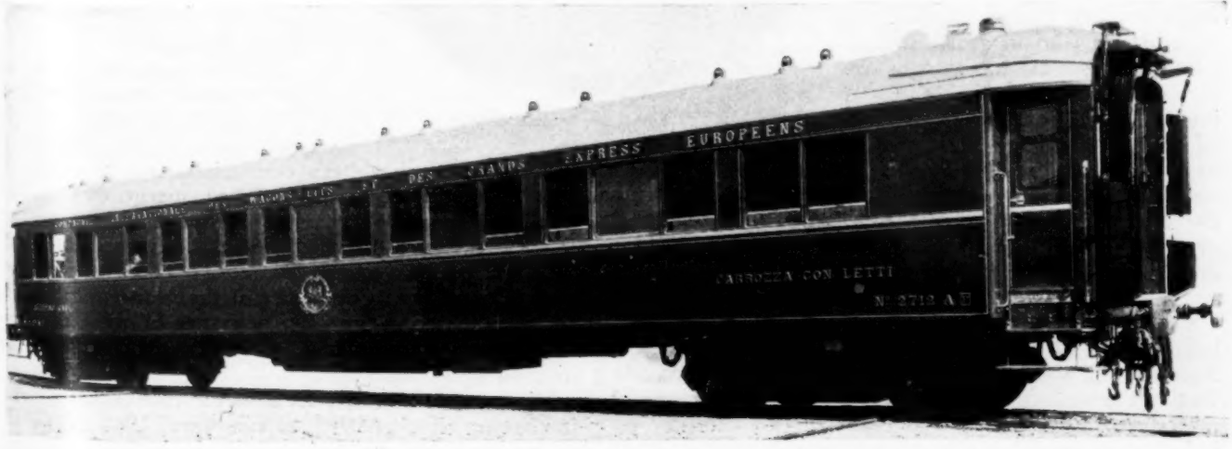


Action of the Stronach Nail and a Pointed Nail When Driven Into Wood

a triangular hole ahead of the body of the nail. The size of this triangular hole is always proportional to the size of the nail body, as indicated in the illustration, and is always inscribed inside the circle which forms the cross section of the nail body. There are no void spaces around the nail in the wood, as is the case with the pointed nail.

The Pittsburgh Testing Laboratory made a comparative test to determine the holding power of a blunt diamond-pointed nail 2½ in. long and a Stronach nail 2¼ in. long. The tests showed that the Stronach nails, driven 1¾ in. into the wood, had nearly eight per cent greater holding power than the diamond pointed nails, driven to a depth of 2 in. The approximate number of diamond pointed nails per pound was 106 as compared with 161 Stronach nails to the pound. This increase in the number of nails per pound in favor of the Stronach nail is because they are shorter than other nails by the length of the customary pointed end.

* * * *



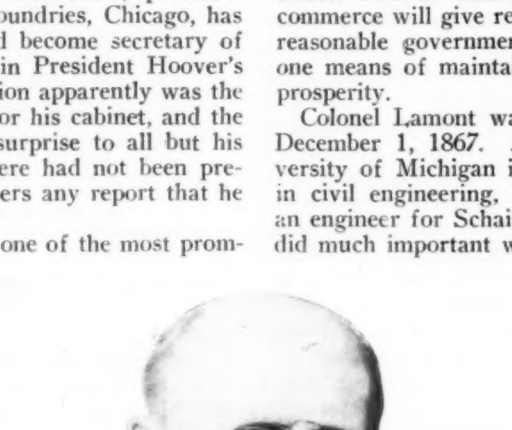
International Sleeping Car in Service on the Italian State Railways

Robert P. Lamont Becomes Secretary of Commerce

President of American Steel Foundries accepts appointment in President Hoover's Cabinet—Has long been prominent in railway equipment and supply field

ROBERT PATTERSON LAMONT, president of the American Steel Foundries, Chicago, has resigned this position and become secretary of commerce of the United States in President Hoover's cabinet. Colonel Lamont's selection apparently was the last made by President Hoover for his cabinet, and the announcement of it came as a surprise to all but his closest business associates, as there had not been previously published in the newspapers any report that he was under consideration.

Colonel Lamont long has been one of the most prominent men in the railway equipment and supply manufacturing field, and has a wide acquaintanceship among railway officers throughout the country. His appointment as secretary of commerce, in which office President Hoover firmly established his own reputation as an economist and statesman, will be regarded by all who know Colonel Lamont, and are familiar with his career, as an ideal one.



Robert P. Lamont

Colonel Lamont has been highly successful in business, but he is much more than a business man. He is a profound and widely informed student of business and economic problems. He is a man of wide reading. While he has never taken an active part in politics, he has always been a very public spirited citizen and has taken a keen interest in, and has a broad grasp, of public affairs. He has shown rare diplomatic ability in dealing with men in all the walks of life. Possessing this unusual combination of attainments and qualities, he cannot fail to be highly successful in directing the work of the department of commerce in behalf of the promotion of the country's business prosperity and in the future development of its growing domestic and foreign commerce.

One of Colonel Lamont's activities for many years has been that of a director of the Railway Business Association, which has devoted itself to problems affecting the welfare of the railway equipment and supply manufacturing industry and especially to exerting its influence in behalf of fair and constructive regulation of the railways. It may reasonably be expected that under Colonel Lamont's guidance the department of commerce will give recognition to the need for fair and reasonable government treatment of the railroads as one means of maintaining and increasing the national prosperity.

Colonel Lamont was born at Detroit, Michigan, on December 1, 1867. After graduating from the University of Michigan in 1891 with the degree of B. S. in civil engineering, he began his business career as an engineer for Schailer & Schinglan, contractors, who did much important work for the first Chicago world's fair. He was secretary and engineer of this company from 1892 to 1897.

He was first vice-president of the Simplex Railway Appliance Company from 1897 to 1905, in which year he became president of this company on its acquisition by the American Steel Foundries. At the same time he became first vice-president of the American Steel Foundries, and in 1912 was elected president of the latter company. He has been chairman of the board of the Griffin Wheel Company since it was acquired by the American Steel Foundries. and in addition has been a director of Armour & Company, Montgomery Ward & Company, the International Harvester Company, the American Radiator Company and the Illinois Bell Telephone Company.

Colonel Lamont has taken an especial interest in welfare work on behalf of the employees of the enterprises with which he has been connected, and is given the principal credit for having installed emergency hospitals, dining and rest rooms and co-operative stores in plants of the companies of which he has been the head. His civic activities have included service as a vice-president of the Chamber of Commerce of the United States. He has participated in graduate activities of the University of Michigan, and donated $40,000 in 1912 to insure the erection of an observatory.

He entered the army as a major in February, 1918, and from October, 1918, to February, 1919, was chief of the procurement division of the ordnance department, with the rank of colonel.

Montreal Terminal Plan Approved

Engineer for Canadian government favors C.N.R. proposal —Urges Unification of all rail facilities, electrification, rapid transit development for Island of Montreal

FREDERICK Palmer, the British consulting engineer retained by the Canadian government to report on the feasibility of the proposed Canadian National terminal improvements in Montreal, has presented his report and it has been made public by the Minister of Railways at Ottawa. Mr. Palmer approves the plan (see *Railway Age*, November 26, 1927, page 1060), characterizing it as "a bold and brilliant plan for effecting the purposes aimed at." He believes, however, that the Canadian Pacific should join in the proposed construction, making it a union station, and he further proposes that the plan should be extended to provide for greater accommodation for suburban traffic. He recommends, also, that the railways pool their freight facilities on the Island of Montreal in such a way as to avoid all waste from competitive cross hauling in the streets.

The project, if carried out jointly, is estimated to cost $62,765,000, plus $20,935,000 property damage. The consolidation of freight facilities, details of which have not been worked out, might bring the total cost close to $100,000,000. Mr. Palmer points out, however, that at least $35,000,000 has to be spent anyhow to rehabilitate the Canadian National's station accommodations. The cost figure does not take into account the development of "air rights" which are provided for in the new station plans, nor for the value of existing passenger terminals of both railways which could be relinquished for other purposes. These values, he believes, can safely be placed at $15,000,000, so that there would remain $50,000,000 of the total of $100,000,000 on which a fair return would be a matter for conjecture. There would be certain operating economies and a considerable increase in traffic, but it would be difficult "to place a value in money on the enormous advantages to the community" of the proposed union terminal, together with its promise for providing badly needed rapid transit facilities on the island of Montreal.

Portions of Mr. Palmer's report follow:

The terminal passenger accommodation at Montreal on those railways which became absorbed in the amalgamation constituting the Canadian National exists today probably as first constructed many years ago, and can now only be described as quite obsolete. To meet this situation a plan has been formulated by which the site of the existing "Tunnel" station has been adopted for a central station, to which trains from the west now using Bonaventure station are to be brought by a new line connecting Pointe Claire to Val Royal, and by the tunnel line under Mount Royal. Trains from the south and east, also at present using Bonaventure station, are to be diverted from the west end of the Victoria Bridge, over the St. Lawrence River, and brought into the south end of the proposed station, while a connection, turning east from the new approach to the Victoria Bridge, serves to connect with the east-going trains which at present have their terminus at Moreau street station.

The right-of-way from the Tunnel station southwards was, in part, already in the possession of the National Railways, as also were certain properties adjacent which had been acquired from time to time recently in view of the necessity for providing new terminal facilities, while the right to take up further land required for the scheme has been secured by the usual notice of expropriation.

The necessity for rehabilitating the passenger terminal facilities was made the more insistent because of the requirement of the Board of Railway Commissioners to submit proposals for the abolition of level crossings in the City of Montreal, of which there are over twenty in the short distance (about two miles) between Bonaventure terminus and Turcot, where the railway separates the north side from the south, west of that terminus. There are also nearly fifty level crossings on the line running eastward from Moreau street station, the elimination of which has become more easily possible by a tentative arrangement recently suggested, whereby some measure of joint use of facilities might be entered into by the two railway systems.

C.N.R. Plan Praised

It may be said at once that the National Railways proposals for a central station to accommodate its own traffic was a bold and brilliant plan for effecting the purpose aimed at. If there is a fault in the proposal it lies in the fact that the approach from the north (and west) is by a double-line tunnel under Mount Royal, and any substantial increase of traffic would mean duplication of the tunnel section—a costly business. Many other proposals had previously been submitted to the railway authorities or to the press, which were mainly on the lines of providing a Union station for both the C. P. R. and the C. N. R. systems. Some of the schemes put forward had been prepared by engineers, but most of them might be described as "amateur efforts." It is believed that every one of these proposals has been carefully considered (certainly all the known proposals have been examined), and it is no disparagement to even the best of these schemes to say that the C. N. R. plan, which has resulted from prolonged study of the question in all its aspects by the extremely competent officials of that railway, is incomparably the best.

Since the plan was made public, the C. P. R. authorities, in response to the request to give it consideration, engaged the C. E. Smith Company, of St. Louis, consulting engineers, to review the proposals. The outcome of their report is the adoption of the present Windsor Street Station site for a union station, with access thereto from the C. N. R. by a new line from St. Henri on that railway to a point on the C. P. R., slightly west of Windsor Street Station, and it is believed that, in further study of the question, it is admitted that no other alternative seems practicable.

Now the existing Windsor Street Station, although not modern, is well equipped, and affords ample accommodation for the present traffic of the railway system it serves. Without considerable extension it would not suffice for any large increase in passenger traffic, and certainly not for the additional facilities which would be necessitated by the addition of C. N. R. traffic. It is understood that the C. P. R. authorities have in view the enlargement of the station northwards, and there can be no doubt that, at a price, it can be sufficiently extended to provide for both railways in regard to present traffic and reasonable growth thereof.

There are, however, other considerations in respect of which it falls far short of the legitimate requirements of a union station. It is not "union" in the sense of being a centre from which lines radiate, or can radiate, to north, south, east and west. That is impossible without detours of varying magnitude in all directions excepting the west—the principal direction, admittedly. Then it is not nearly so well served by the main arterial roads of the city, which may be said to lie between Sherbrooke street on the north and Notre Dame street on the south, both inclusive. Its main access is by St. Antoine street, and other west to east main streets are only reached by cross roads. The connecting line to the C. N. R. can only be made mainly on a viaduct running diagonally across St. Antoine and St. James streets, and over several cross roads, without any reasonable prospect of the viaduct being flanked by buildings as is proposed for the short viaduct south of the Tunnel site station.

It is believed that the C. P. R. authorities are convinced

that the Windsor Street site is the only other possible one which could be considered, and as they must be fully aware of the many projects which have been made public from time to time, it follows that, in their opinion, a union station is only possible at Windsor street or the Tunnel site. For the reasons given in the last paragraph, Windsor street, besides having other disabilities, is not in reality a union station.

The Tunnel site, on the other hand, possesses every attribute which a central station can have. Geographically, it is somewhat nearer to the trade centre of gravity. It is nearer to the commercial and the financial centres and nearer, also, to the more densely populated portion of the city lying between Victoria square and Mile End.

Where Should C.P.R. Participation Begin?

The objection of the C. P. R. to participating in a joint-station enterprise is understood to be based upon the fact that they already have a very serviceable terminus capable of being considerably extended, whereas the C. N. R. have little better than a lot of ramshackle buildings, woefully obsolete. In such conditions, would it be fair to ask the C. P. R. to embark upon, and pay half the cost of, a new station? Of course it would not! The C. P. R. share would take effect from the point at which the C. N. R. re-established its accommodation to an extent comparable with that at Windsor street. Another argument is that the government can enable the C. N. R. to carry out any scheme, even if an extravagant one, because it can provide the capital at the expense of the taxpayer, whereas the C. P. R. has to obtain new capital from its shareholders. Both these assumptions are perfectly true, but, really, they amount to one and the same thing, as will be shown. The source from which the capital comes is not important. Money is readily available everywhere if (1) the security is beyond doubt, and (2) the return thereon is good. In both railways, the security is first-class—the return comes from the population of Canada. The shareholder is the receiver, not the payer of the return, and whether that return comes from railway charges only, or from railway charges plus taxes, it amounts to the same thing—the public have to pay in any case, because the railway freighter, the taxpayer, the railway passenger, is one and the same—"the public."

Whatever may be the ultimate decision in regard to the concentration of all Montreal main line passenger service at the Tunnel station, there can be no two views about the desirability of, indeed the necessity for, grouping all C. N. R. trains at this place. Their present terminal accommodation has to be rebuilt in any event, and it is very little, if any, more costly to carry out the reconstruction in one place accessible to all sections of their undertaking, than to rebuild on the several existing station sites. Among the many advantages of following this course, not the least is the consequent abandonment of the use of the present line between St. Henri and Bonaventure station for passenger trains. It becomes much simpler to deal with that elimination of level crossings called for by the Railway Commission, which has really led to the much larger proposals now under consideration.

What will be the outcome? If the C. N. R. proceed to build a station for their own lines upon the Tunnel site they will naturally not only seek to provide a building worthy of the city but also to equip it with all the latest appliances which modern skill has devised for the convenience and comfort of passengers. Will a wealthy corporation like the C. P. R. be satisfied to take second place in the city in which they have always held a predominant position? Second place in the city, which is not only the financial centre of the company, but also the home of one-ninth of the population of Canada? Would it not be better to face the position boldly, and at once by deciding upon a union terminal station, and thus avoid the wasteful competition which will inevitably arise in the absence of co-operative effort?

Mr. Palmer in his report places great stress on the development of suburban traffic, facilities for which he finds a great need in Montreal. Such facilities, if provided, coupled with electrification, he believes would result in a tremendous increase in traffic. He summarizes his suggestions as follows:

It is absolutely necessary to provide suitable passenger station accommodation for the Canadian National to replace the obsolete buildings now in use.

The tunnel site affords by far the best means for developing this necessity.

This site affords possibilities of union terminal facilities which cannot be given at any other place, and it seems highly desirable that advantage be taken of this opportunity of concentrating passenger traffic.

The connection with the C. P. R. at the north end and with Place Viger creates a belt railway encircling the city, affording unrivalled facilities for development of suburban, or rapid-transit traffic.

To obtain the greatest advantage from this development of highly remunerative traffic it is essential that the railways on the Island be amalgamated and the passenger service electrified.

Such amalgamation should include freight traffic, in order that customers may despatch, or receive, goods by either railway at any depot and thus save cartage charges and congestion of city streets.

Consideration should be given to the further question of amalgamating under one control the transport facilities of the Island, including the harbor and the tramways.

To assist in arriving at a decision in this respect a committee might be constituted of one member representing each of the main interests involved, viz., the Canadian Pacific, the Canadian National, the harbor, the tramways, and the city, with a chairman appointed to act in an independent capacity.

The powers of this committee will only be advisory, as it is undesirable for amalgamation without mutual consent.

* * * *

The New York Central's "Twentieth Century Limited" at Albany, N. Y.

Reading Increases Net Income

Report for 1928 shows greater efficiency—Electrification planned—Extends its motor coach lines

THE Reading, while it is one of the leading anthracite carriers, nevertheless has a tonnage of bituminous which exceeded that of anthracite in 1928 by 55 per cent; and its combined revenues from coal traffic—anthracite and bituminous—in 1928 were but 40.86 per cent of the total, as compared with 43.99 per cent from merchandise traffic. While maintaining its leadership as an anthracite carrier, it has developed other traffic so that its ratio of all coal tonnage to total, 54 per cent, is but slightly greater than the average for all the roads in the Central Eastern region. The percentage which products of mines bears to total tonnage on the Reading is approximately the same as the average for the region.

Traffic Same as in 1925

An accompanying table shows selected freight operating statistics of the Reading Company for the first eleven months of 1928, as compared with the similar period of 1925. These two periods may fairly be compared since, as will be noted, their volume of traffic as measured in net ton-miles was almost exactly the same. This table shows material improvement in most of the indices of operating efficiency, particularly those which are affected by an increase in the average train-load, which plainly appears from these figures to be the principal method by which the Reading has brought about operating economies in its freight service.

From the end of 1925 to the end of 1928 the Reading decreased the number of freight locomotives in service from 688 to 601—a decrease of 12.7 per cent—while during the same interval the average tractive power per road freight locomotive rose to 50,768 lb.—6.2 per cent.

The operating ratio in 1928 was 77.6, the same as in the preceding year. The maintenance of equipment ratio was 22.7 and the maintenance of way ratio 13.9. The transportation ratio was 36.7, as compared with 37.7 in the preceding year.

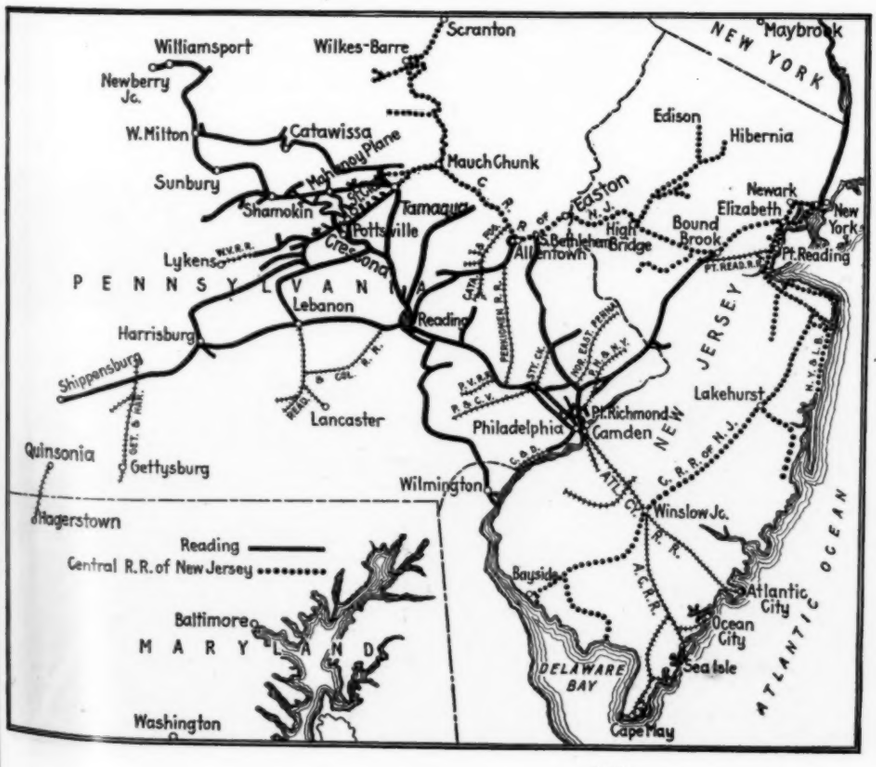
Heavy Traffic Density in Spite of Many Branch Lines

The Reading, as the map shows, has a heavy branch line mileage, its entire mileage being grouped into a limited radius. Nevertheless its traffic density is great and is exceeded by but two carriers in its region, neither of which are comparable with it from a standpoint of branch line mileage. The predominance of branch line mileage also undoubtedly tends to hold down the average train loading by weighting it with many trains which perforce run with light loads. The concentration of lines within a restricted radius gives rise to another problem which the Reading has to meet—the predominance of short-hauls. The average haul per revenue ton in 1928 was approximately 100 miles. This is 35 per cent less than the average for the Central Eastern region and is even less than the average for the New England region. Average ton-mile revenue was 1.191 cents in 1928, virtually the same as in the preceding year.

Passenger train revenues in 1928 were but 8.64 per cent of the total. Passenger business on the Reading, however, has an importance which is not reflected in these figures. The road is so situated that

Comparison of Selected Freight Operating Statistics

	11 Months 1928	11 Months 1925	Per cent of change Inc.	Dec.
Mileage operated	1,130	1,132		0.1
Gross ton-miles (thousands)	12,695,224	12,386,307	2.5	
Net ton-miles (thousands)	6,307,673	6,307,963	...	...
Freight train-miles (thousands)	6,465	7,041		8.2
Freight locomotive-miles (thousands)	7,670	8,502		9.8
Freight car-miles (thousands)	302,414	295,728	2.3	
Freight train-hours	581,732	629,964		7.7
Car-miles per day	22.7	22.6	0.4	
Net tons per loaded car	34.6	34.8		0.6
Per cent loaded to total car-miles	60.2	61.3		1.8
Net ton-miles per car day	473	482		1.9
Freight cars per train	47.7	42.9	11.2	
Gross tons per train	1,964	1,759	11.7	
Net tons per train	976	896	8.9	
Train speed, miles per train-hour	11.1	11.2		0.9
Gross ton-miles per train-hour	21,823	19,662	11.0	
Net ton-miles per train-hour	10,843	10,013	8.3	
Lb. coal per 1,000 gross ton-miles	148	162		8.7
Loco. miles per loco. day	58.8	54.2	8.5	
Per cent freight locos. unserviceable	19.5	16.9	15.4	
Per cent freight cars unserviceable	4.8	2.5	80.0	



it not only has had to meet the competition of motor vehicles but, a great proportion of its business being in suburban Philadelphia, it has likewise suffered from the extension of the Philadelphia rapid transit lines. Its answer to this situation has been prompt and vigorous. A highway subsidiary has been organized and is extending its operations widely in Reading territory, and the company has begun the electrification of its Philadelphia suburban lines. It is expected that these efforts will result ultimately in reducing operating expenses, improving service to the public, maintaining the integrity of the railroad's common-carrier passenger service and, ultimately, should result in the retention of and increase in the volume of business. Efficient, frequent and fast passenger service is a necessity for continued industrial development in a densely populated territory, such as the Reading serves, and its efforts to maintain such service in the face of difficulties are unquestionably of importance to the future development of industry, and incidentally of freight traffic in its territory.

Reduce Expenses to Meet Revenue Decline

The Reading's operating revenues in 1928 totaled $89,940,033—a reduction of $2,650,402 under the preceding year. Operating expenses were reduced almost sufficiently to cover the loss, however, and net railway income totaled $17,098,848—an increase of $308,727 over the preceding year. Other income—principally dividend income—increased and the company was able to carry to profit and loss $11,878,546 or $2,049,375 more than in 1927. Compared with this balance, its dividend (8 per cent) payments totaled $8,397,602. Appropriations out of income for uncapitalized improvements totaled $3,212,143. Improvements out of income have not fallen below $3,000,000 in any year since 1922. Total expenditures for additions and betterments over the past five years reflect the same tendency as shown by most roads, i.e., an increasing proportion of expenditures on roadway with a declining tendency in equipment. The figures follow:

	Expenditures for Road	Expenditures for Equipment
1924	$3,307,217	$4,289,104
1925	3,956,520	9,694,682
1926	3,916,350	1,795,766
1927	6,352,789	3,148,468
1928	5,818,094	275,262

Among the outstanding improvements of recent years have been extensive additions to shops at Reading; track realinement at Port Clinton; filling in a high trestle on the Catawissa Railroad and the extensive improvements in coal and grain handling facilities at the Port Richmond (Philadelphia) tide-water terminal. Freight house and other terminal improvements at Philadelphia have been extensive and include a new terminal for perishables—constructed in conjunction with the Baltimore & Ohio. Grade crossing elimination shows steady progress each year. A new passenger terminal in North Philadelphia which will have space for parking a large number of patrons' automobiles is under construction.

In connection with these improvements it is worthy of notice that the Reading's standards of track construction are very high—130 lb. rail, creosoted ties and rock ballast—and that maintenance to this standard is regularly pursued.

Steps have been taken in recent months by the Reading to take over under contract the operation of a number of its subsidiaries—among them the Perkiomen and the Port Reading—as a measure of accounting economy.

The balance sheet of the company at the end of 1928 showed investments in physical property, including leased lines, of $339,392,988, and investments in affiliated companies of $43,477,873, the largest single item of the latter being its Central of New Jersey stock holdings by which it controls that property. Capital stock totaled $139,950,950 and long-term debt $119,122,678. Corporate surplus stood at $106,963,705. There are no early maturities of important bond issues.

* * * *

C.N.R. Train at Sunnyside, Near Toronto

Accidents Investigated—September and October

THE list of train accidents investigated by the Interstate Commerce commission in September, 1928, includes two collisions, as noted below; and that for October includes five collisions. Following are abstracts of the reports of the Bureau of Safety on its investigations of these collisions:

Texas & Pacific, Cheneyville, La., September 1, 9:18 p. m.—An eastbound freight train of the Southern Pacific, moving at about six or eight miles an hour, was run into at the rear by a following freight of the Texas & Pacific, second-class train No. 54, wrecking the caboose and four cars. An employee riding on the car next to the caboose in the leading train was killed and five other persons were injured. The engineman of No. 54 is held responsible for running too fast within yard limits and also for disregarding the stop indication of a block signal. This engineman said that he did not see the markers on the caboose ahead of him, but there was ample evidence that they were in full view. He had exceeded the speed limit all the way from the last preceding station and was violating a village speed ordinance within the limits of Cheneyville. This engineman was in a dazed condition following the collision and the report discusses the theory that he had been intoxicated, but finds no evidence to support that theory. It appears that the Southern Pacific train had started out from Alexandria without knowing whether or not No. 54, a superior train, had gone; and, sometime later, the dispatcher had to issue an order authorizing the Southern Pacific train to run ahead of 54 until overtaken. The operating officers of the road are cautioned to pay closer attention to conditions under their supervision, with a view to seeing that the rules are enforced and obeyed.

New York Central, Mott Haven Junction, N. Y., September 4, 9:40 p. m.—A New York, New Haven & Hartford train of empty passenger cars, backing out of the yard across one of the Hudson division tracks and destined for the main track leading toward New Haven, collided with a similar train of the New York Central, at the crossing, damaging several cars and causing the death of a Pullman porter. The crew in charge of the New Haven train was not acquainted with the yard and the train was in charge of the assistant general yardmaster, acting as pilot; but this man left the train before it had completed half its movement, and without telling the New Haven men that he was leaving the responsibility of the train to them; and the train was derailed by the derailer at a signal which was set against it; and ran against the 12th car in the N. Y. C. train. The yardmaster had arranged with the towerman to sound three blasts of the tower whistle as soon as the signals had been cleared for the proposed movement, but there was a misunderstanding between these two men and the train was started before the signals were cleared throughout the desired route. The inspector also gives, as a contributing cause, the failure of the New Haven conductor properly to look after the movement, safety and care of his train. Although there was a pilot aboard, the flagman and brakeman of the New Haven crew had not done all within their power to observe signals and apply brakes. The report finds that the movement of trains in the way it was managed in this case, is common practice, and it calls upon the road to take corrective action; also to see that the responsibility of pilots and conductors in such a case is more clearly set forth in the rules.

New York Central and Rock Island, Chicago, October 13—This report deals with a rear collision of light locomotives on the line between La Salle Street Station, Chicago, and Englewood, 6.65 miles long, which is owned and operated jointly by the New York Central and the Chicago, Rock Island & Pacific. This is a four-track line, the tracks being numbered 2, 3, 4 and 5, beginning at the east. Signals are provided on tracks 2 and 5 for both directions. Tracks 2 and 3 are maintained by the New York Central, tracks 4 and 5 by the Rock Island, while the signals on all four tracks are maintained by the Rock Island. The line is straight and nearly level. The collision occurred near 29th street.

New York Central engine 4553, moving northward, about 10:50 p.m., on track No. 3, was run into by a following locomotive, No. 4009 of the Rock Island, which was moving backward; and the engineman of the leading engine was killed while two other New York Central employees were injured. Several minutes after the collision, New York Central train No. 128, moving southward on track 4, ran into the wreckage, but without doing great damage. The engineman and fireman of the Rock Island engine are held responsible for failing to observe automatic signals, both caution and stop, and failing to maintain a proper lookout. Careful investigation convinced the inspector that the signals worked properly, the block sections being only about one-half mile long. The leading engine was moving very slowly and the inspector holds that the men on the other engine not only could have seen the automatic signals (on bridges) but would have seen the locomotive on the track ahead of them if they had been keeping a good lookout. They estimated their speed at 15 or 20 miles an hour but the inspector thinks it was probably 30 or 40 miles an hour.

Both the New York Central and the Rock Island have automatic train control on the lines converging at Englewood but the joint track has no train control equipment, and the devices used by the two companies are not interchangeable. The Rock Island engine, moving backward, was equipped with automatic train control but only for moving in the normal direction, no provision being provided for reverse movements.

Union Traction Company of Indiana, Sharpsville, Ind., Sunday, October 21, 6:35 a.m.—A northbound passenger train consisting of electric motor 401, collided with southbound extra 296 consisting of motor 296 and trailer 235, both trains running at good speed. It was a bad wreck, though none of the vehicles ran off the rails. The wreckage caught fire, presumably from stoves, and was mostly burned up. The motorman of the southbound train jumped off just before the collision and was killed, and a lineman was burned to death; three other persons were injured. The southbound train had encroached on the time of the northbound, for which Conductor Draper and Motorman Oler were responsible. Conductor Draper had lost his timetable, on the last preceding trip, and requested permission to consult Oler's timetable, but the motorman would not produce it, saying that he "could see," and Draper did not assert his rights either by stopping the train or by insisting that the time table be produced. Draper was not very familiar with the run, but he could have obtained information from the dispatcher, with whom he had had occasion to communicate by telephone. The dispatcher claimed also to have called the attention of Draper to the northbound train; but this Draper denies. The northbound train is annulled from Indianapolis to Tipton on Sundays, this fact being stated in a footnote on the table; and the inspector thinks it probable that the motorman had misread the footnote. The number of trains on this single-track line is such that the director of the Bureau of

safety deems the block system "amply warranted."

Chicago & North Western, Crookston, Neb., October 22.—Eastbound freight, extra 1159, with 38 cars, mostly loaded oil tanks, suddenly stopped by the failure of a drawbar, was shortly afterwards run into at the rear by following freight, extra 1220, with 29 cars of live stock, moving at about 12 miles an hour. The wreck was a bad one and the caboose of 1159 was burnt up. Two drovers in this caboose were killed and two employees were injured. Train 1220 had left Cody 15 minutes behind 1159, this being the regulation time interval, and there being no block system in force. For the leading train, carrying oil, the speed limit rule was 25 miles an hour, while for the other train the general rule of 30 miles an hour applied. The inspector puts the blame on the engineman of 1220 and the flagman of 1159, both these men knowing that the two trains were running close together. It is believed that 1159 had made less than 25 miles an hour and that the other had made more than 30 miles an hour. The flagman is believed to have done all he could after his train was stopped, but, knowing that a faster train was following, he should have thrown off a lighted fusee on the straight line which preceded the series of curves and tangents within which the collision occurred. The collision occurred about 12:50 a.m. but the inspector is unable to determine the time within several minutes. The engineman of 1220 had failed to answer the stop signals given by the flagman because he was "too busy doing all he could to reduce speed on the descending grade". The flagman had tried to use a fusee but it would not light; he said that this was the first time he had ever had such an experience with a fusee. It was impossible to find the fusee after the collision and the fusees in the caboose were consumed by the fire. On 192 miles of this line, there are only four intermediate telegraph offices which are continuously operated; and the number of trains on the division, including two first-class and two second-class, each way daily, is such that the inspector suggests that the advisibility of adopting some form of block signal system should be considered.

Missouri Pacific, Knoxville, Ark., October 23, 6:20 p.m.—Northbound freight train No. 168—58 cars and caboose—ran past Knoxville, where it should have met southbound passenger train No. 143, and collided with the passenger about half a mile north of the switch. Baggageman killed, two passengers and eight employees injured. The passenger train consisted of a single gas-electric motor. It was moving at about five or ten miles an hour and in the collision was pushed backward about 162 ft. The engineman and conductor of the freight were held primarily responsible for failing to obey a meet order which both had received and understood, but the other members of the crew also are blameworthy. The fireman was not very familiar with the road but all the other employees were experienced. The report quotes the excuses of the negligent men at considerable length. The engineman had turned his attention to the fire, the fireman having allowed the water to get too high, and overlooked the order, which he had kept in mind at least a part of the way. He did not sound the whistle, according to rule, approaching a meeting point. The fireman had read the order but not audibly; having trouble with the stoker he also forgot the order. He did not know when the train passed Knoxville station. Cox, front brakeman, was in the brakeman's cab on the tender and so had not read the order. He did not ask to see the order; he had known about it but had forgotten what station was named in it. The middle brakeman, Russell, was not told about the order, but he knew that train 143 was about due and though he went forward to join Cox on the tender, he did not ask him anything about the meeting point. The road has a manual block system but both trains held permissive cards.

Union Pacific, Green River, Wyo., October 24.—An eastbound freight train which had just arrived in the yard and had stopped, was run into at the rear by a following freight (of the Oregon Short Line) and the locomotive was overturned and much other damage done. The engineman of the O. S. L. train was killed and one other employee was injured. The engineman (who was killed) was to blame, having passed a cautionary and a stop signal and having also failed properly to reduce speed within yard limits. There was evidence that the airbrakes had worked properly and that the engineman had been in full possession of his faculties a short distance back. He had been an engineman for 18 years with a good record. Some 30 miles back, when this train consisted only of the locomotive and caboose, this engineman and the head brakeman had gone back to the caboose to obtain a few minutes' sleep, leaving the conductor to operate the engine. It appeared also that the engineman may have been in a state of anxiety about sickness in his family.

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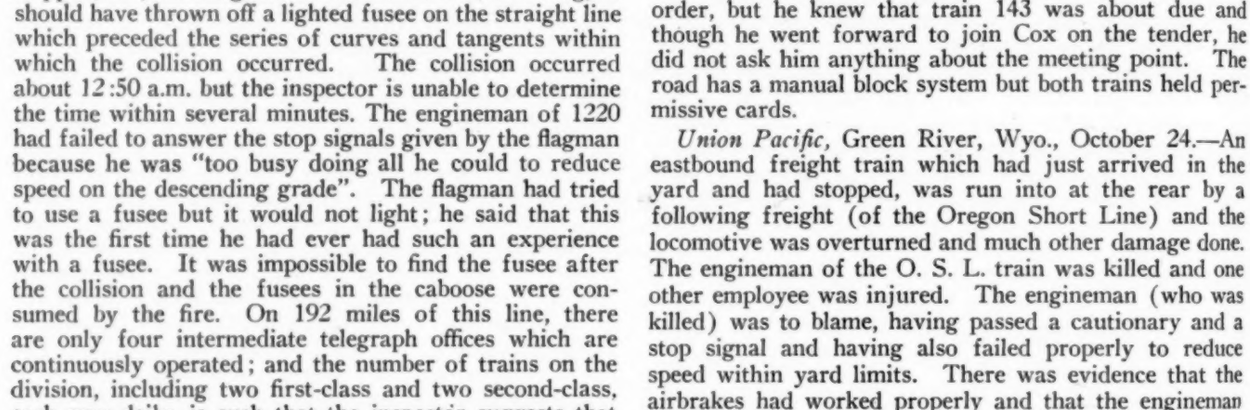


Santa Fe Passenger Trains at Chicago

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Mergers and the Law. Following an outline of traditional legal policy and a discussion of the early construction of the Sherman Act, the Reading, Union Pacific and Terminal Railroad Association of St. Louis cases are cited in the chapter on the rule of reason in concrete application (Chapter 3) and the Transportation Act 1920 is included in Chapter V "Recent Federal Legislation Bearing upon Anti-Trust Policy." 153. Pub. by Industrial Conference Board, Inc., New York City. $3.00.

Proposed London and Paris Railway—London and Paris in 2 Hours 45 Minutes, by William Collard. This proposition has been exciting Europe. The author takes up details of the proposed railway, gage (7 ft. gage recommended), high speed traction, traffic, the teaching of foreign languages, reception of scheme in England and in France, and the Channel Tunnel. Appendices contain rather fascinating estimates for construction and equipment, for the Channel Tunnel, and also a map and 44 pages of draft timetables. 292 p. Pub. by P. S. King & Son, Ltd., London, England. 10 shillings 6 pence.

Northern Control of Southern Railroads During the Civil War, by Eva Swanter. Chapter I "Bibliography" brings out the importance of and condition of the Pennsylvania manuscripts in the Schuylkill Arsenal, Philadelphia, the Fort Myer, Va., manuscripts, the Stanton Papers in the Library of Congress, the orders, etc., of the military railroads bureau, as well as government documents and books and reports on the Civil War period. Chapters 2-5 take up in order "The United States Military Railroads," "The Organization of the United States Military Railroads," "Administration of Military Railroads," and "Operation of Military Railroads" in a manner that ought to be a distinct help to those interested in the general subjects of organization, administration, costs, and the human factor, and for this reason is noted in the Booklist in spite of the fact that it will be available probably only on inter-library loan from the University of Wisconsin or this (Bureau of Railway Economics) Library. Thesis at University of Wisconsin 1929 115 p. *mss.*

Periodical Articles

The Bureau of Railway Economics. What it is and what it does. Its descriptive List of Publications March 1, 1929, p. 3-4.

Concrete Sleepers, by Dino Levi de Veali. Description of the various types of concrete cross ties, particularly those experimented with by the Italian State Railways with results of experiments. Illustrations and diagrams. Bulletin of the International Railway Congress Association, February 1929, p. 115-167.

The Economic Possibilities of Carbon Dioxide Ice. "It is rather extending the practice of refrigeration to new fields and supplementing the use of other refrigerants. Competition with natural ice will undoubtedly develop later, particularly in the field of rail transportation . . . " p. 28. Commerce Monthly, March 1929, p. 26-28.

Limitations of Standardization, by K. Gramenz. Translated by John Gaillard. Specific examples, railway and otherwise. Mechanical Engineering, March 1929, p. 206-209.

Some Transport Problems of the Empire, by Brig.-Gen. F. D. Hammond. Discusses preponderance of state-owned railways, difficulties of new railways in undeveloped areas, management of state-owned railways, standards of construction for new railways, need of lowering transport costs by road, and various problems of developing new areas. Discussion, p. 211-217 brings out additional sidelights. Journal of the Institute of Transport, February 1929, p. 202-210.

Looking Backward

Fifty Years Ago

The annual report of the state engineer of New York shows that in 1878, 322 persons were killed and 567 were injured on the steam railroads of that state. There were 155 accidents which were the result of collisions between horseback riders and horse-drawn vehicles and railroad trains, 44 of which were fatal. —*Railroad Gazette,* March 7, 1879.

The thanks of the country are due the United States Senate and its railroad committee for killing the Reagan interstate commerce bill. Even though Congress adjourned without passing the bill it is not to be assumed that efforts to regulate interstate commerce will be abandoned at future sessions.—*Chicago Railway Review,* March 8, 1879.

The Denver, South Park & Pacific [now part of the Colorado & Southern] will reach the highest elevation yet attained by locomotives on this continent. Kenosha Hill, the highest point on the proposed line, is at an elevation of 10,100 ft. and Webster, Colo., is at an altitude of 9,200 ft. The heaviest grade proposed on the line will be but 158 ft. per mile.—*Chicago Railway Review,* March 8, 1879.

Twenty-Five Years Ago

George B. Vilas, freight agent of the Chicago & North Western at Milwaukee, Wis., has been appointed trainmaster at the same point.—*Railway Age,* March 11, 1904.

The Minneapolis, St. Paul & Sault Ste. Marie has awarded a contract for completing the extension from Glenwood, Minn., to Emerson, Man., about 200 miles, which, when finished about November 1, will form a new route between St. Paul, Minn., and Winnepeg, Man., in conjunction with the Canadian Pacific.—*Railway Age,* March 11, 1904.

A bill was introduced in the lower house of Congress on March 3 by Representative Esch of Wisconsin providing that after January 1, 1906, it shall be unlawful for railroads to build any day or passenger coach, mail car, chair, smoking or combination car or tourist sleeper which is not constructed with a steel underframe, steel vertical framing for the vestibule and steel body and roof framing.—*Railroad Gazette,* March 11, 1904.

A special transportation and traffic committee of the Pennsylvania has submitted a report to the president of that railroad which provides for an entire reclassification of freight tonnage in order to prevent congestion. Instead of splitting westbound trains at Altoona, Pa., before crossing the mountains, it is proposed to assign to a locomotive at any terminal only the maximum tonnage which it can haul over the ruling grade on the whole line traversed.—*Railway Age,* March 11, 1904.

Ten Years Ago

The Director General has issued a circular transferring portions of a number of railroad lines between the Southern, the Southwestern and the Central Western regions in order to provide a regrouping to restore prewar conditions on individual properties. The railroads benefitting by this order are the St. Louis-San Francisco, the Illinois Central, the Chicago, Rock Island & Pacific and the Colorado & Southern.—*Railway Age,* March 7, 1919.

Caught between the upper and nether millstones of a political contest between the President and the Republican senators, the bill to appropriate an addition of $750,000,000 to the revolving fund of the Railroad Administration failed of passage at the final session of the Sixty-fifth Congress, which adjourned at noon on March 4. Almost every time-killing expedient known to parliamentary practice was brought into play to prevent its consideration, although no opposition was manifested to the appropriation itself. President Wilson left Washington and sailed for France without calling an extra session.—*Railway Age,* March 7, 1919.

Odds and Ends of Railroading

Doors

The Pennsylvania has resumed the use of tunnel doors on one of its branches, after a lapse of 28 years, which reminds F. M. P. of the farmer whose barn was on the line of a survey of a new road and who said: "I'll darned if I'm going to open and shut my barn doors every time a train comes along."

A New One for Wifie

The conductor had run off a right good month, but after cashing his check allowed the boys to pull him into a poker game. When he arrived home that evening he handed his wife $58.

"My gracious, George, was that all you made last month?" she asked.

"Yes, Honey," said George, "you know we hauled empties nearly all month."—Rock Island Magazine.

A Pullman Wedding

Lee Lane of Nashville, Ark., and the former Mrs. Ula Merrill, of Nashville, Tenn., were married in a car in the station at Hope, Ark., while the train was making a station stop. Lane was required by urgent business to return to Nashville, Ark., and there was no time for a formal ceremony, if the train was to be caught. Accordingly, a minister was hastily summoned and the wedding took place on the train. The minister got off only an instant before the train started.

Short Station Names

A correspondent in the Railway Gazette reports the ultimate in short station names. On the Sudan Government Railway, for a distance of several miles, the stations are simply numbered from 1 to 9, and the signboards read accordingly. The correspondent advances the claims of "1" as the shortest station name in the world. Another railway official, writing from India, adds two more two-letter stations to the list. They are "Ib" on the Bengal-Nagpur Railway and "Ye" on the Burmese Railways.

Some Job

Alex Johnson, vice-president in charge of traffic of the Chicago & North Western was honored by having a new railway hotel at Rapid City, S. D., named Alex Johnson.

President Fred W. Sargent and other officials of the road were holding a conference in the hotel and it lasted until there was barely time left to catch the train. Mr. Johnson told a grandson to rush up to his room and pack his bag. As they headed for the station, the grandson remarked:

"It was some job getting everything in."

"I didn't have any such job packing it to come here," Mr. Johnson told him. "What was the trouble?"

"You brought so many of your own towels that I had to jump on the bag to get them all in."—Forbes Magazine.

The Passing of Tye

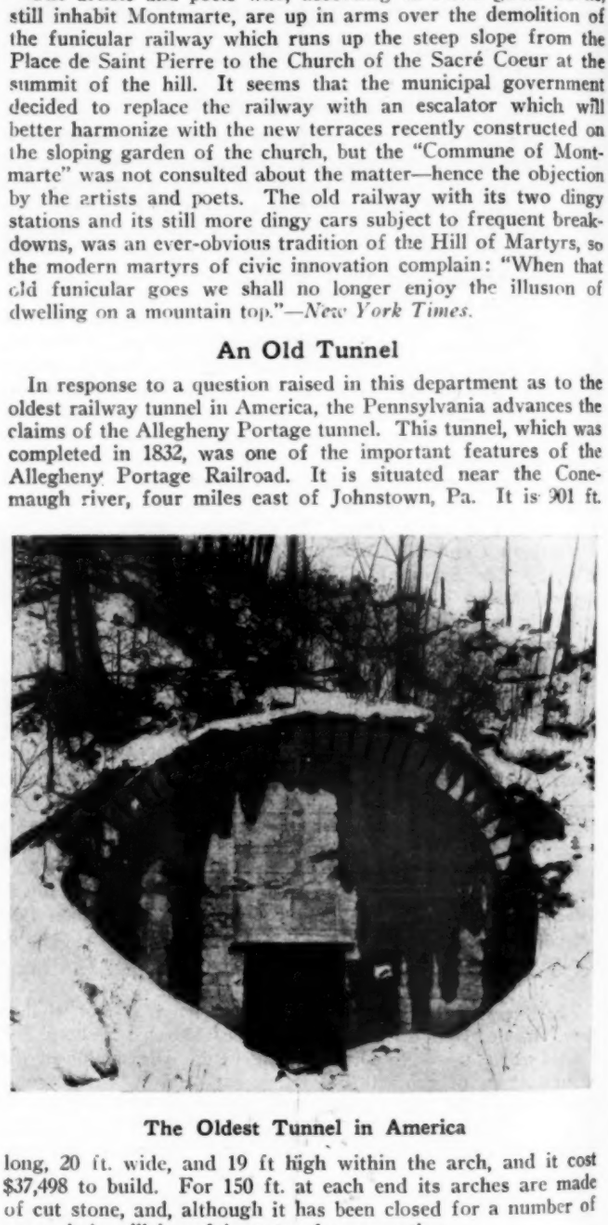
Tye, Wash., the most Alpine village in the Northwest, has a history out of proportion to its age and size. Once a lively community, it has been left high and dry by the new Cascade tunnel and soon bears and coyotes will roam through the deserted houses. Tye was a mountain division station on the old high-line of the railroad. It possesses a little red schoolhouse different from all others in the United States. Covered walkways from various parts of the town of closely clustered dwellings led to the school, the roofed sidewalks being built to defeat the engulfing snows of winter. These will be abandoned. Likewise stores and shops where railroad men bought will be left vacant. Tye was too high for forest fires, too rocky for gardens or even wild shrubs to thrive, and without water except for a mountain cascade tumbling near by.

Wanton Destruction of "Atmosphere"

The artists and poets who, according to Paris guide books, still inhabit Montmarte, are up in arms over the demolition of the funicular railway which runs up the steep slope from the Place de Saint Pierre to the Church of the Sacré Coeur at the summit of the hill. It seems that the municipal government decided to replace the railway with an escalator which will better harmonize with the new terraces recently constructed on the sloping garden of the church, but the "Commune of Montmarte" was not consulted about the matter—hence the objection by the artists and poets. The old railway with its two dingy stations and its still more dingy cars subject to frequent breakdowns, was an ever-obvious tradition of the Hill of Martyrs, so the modern martyrs of civic innovation complain: "When that old funicular goes we shall no longer enjoy the illusion of dwelling on a mountain top."—*New York Times.*

An Old Tunnel

In response to a question raised in this department as to the oldest railway tunnel in America, the Pennsylvania advances the claims of the Allegheny Portage tunnel. This tunnel, which was completed in 1832, was one of the important features of the Allegheny Portage Railroad. It is situated near the Conemaugh river, four miles east of Johnstown, Pa. It is 901 ft.



The Oldest Tunnel in America

long, 20 ft. wide, and 19 ft high within the arch, and it cost $37,498 to build. For 150 ft. at each end its arches are made of cut stone, and, although it has been closed for a number of years, it is still in a fair state of preservation.

The Portage railroad extended from Hollidaysburg, Pa., over the Allegheny mountains to Johnstown, Pa., and was one of the two rail sections of the combined railway and canal transportation system built by the state of Pennsylvania between Philadelphia and Pittsburgh. The Portage line consisted of a series of inclined planes and levels, five inclined planes being on each side of the crest of the mountains. The loaded canal boats were taken from the water at Hollidaysburg and mounted on trucks for the journey over the mountains. The trucks were drawn by inclined planes by means of cables, the power being supplied by stationary engines at the head of each plane. Horses were used at first to draw the trucks on the level stretches of track, but locomotives were later substituted.

NEWS *of the* WEEK

B. & M. Bridge Over Connecticut River at Brattleboro, Vt.

THE BALTIMORE & OHIO RAILROAD ACCOUNTING ASSOCIATION has elected officers as follows: W. R. Heartt, chief clerk to general freight claim agent, president; E. Frank Thomas, head clerk in the payroll bureau, vice-president; Ethelbert Hall, assistant chief clerk in the revision division of the merchandise receipts auditor's office, secretary; J. T. Maloney, head clerk of the Dayton & Union Railroad, treasurer.

New York Railroad Club Meeting

The New York Railroad Club meeting on Friday evening, March 15, will be in the nature of an "Ingersoll-Rand Night". W. H. Armstrong, manager of tie tamper sales for that company, will make an address on "Uses of Compressed Air Equipment in Track Construction and Maintenance of Railroads". This address will be supplemented with motion pictures showing typical tie tamping and rail laying operations. W. L. Garrison, of the Ingersoll-Rand Company, will give a short talk during the showing of motion pictures of oil-electric locomotive operation.

Felton Heads Military Engineers Society

S. M. Felton, chairman of the board of directors of the Chicago Great Western, has been elected president of the Society of American Military Engineers to succeed General Charles G. Dawes. The society was organized in 1920 to promote efficiency in the military engineer service of the United States Army. Membership is based on technical qualifications, on experience in the forces of national defense, and on a belief in military preparedness as a prevention of war. Mr. Felton is a charter member of the society, having been elected its first vice-president in 1925.

The Canadian Roads in January

For the month of January, operating net of the Canadian Pacific amounted to $1,895,932, as compared with $1,878,036 in January of last year and was the highest net achieved by the road for any January since 1917.

Gross earnings at $15,865,599, were higher by $545,313 over the gross for January of last year, while operating expenses showed an increase of $527,417.

Gross earnings of $18,177,685 for the month of January, 1929, are shown by the Canadian National. During the same month operating expenses amounted to $16,092,944 and net earnings of the system were $2,084,740.

As compared with the same month of 1928, the figures for January this year show decreases. In January, 1928, gross earnings were $18,871,671, the decrease in January, 1929, being 3.68 per cent. Operating expenses, January, 1928, were $16,550,659, while operating expenses in January, 1929, showed a decrease of $457,715 or 2.77 per cent. Net earnings in January, 1928, were $2,321,011, against which the January, 1929, net shows a decrease of $236,270 or 10.18 per cent.

Transit Commission Approves Order to Remove 93 N. Y. C. Crossings

The New York City Transit Commission has approved an order for the removal of the remaining 93 New York Central grade crossings on the west side of Manhattan between St. John's Park (Beach Street) and West 158th street, including the tracks along Twelfth avenue. Execution of the order was made contingent upon agreement between the railroad and the city on the proposed improvement plan of the west side riverfront.

The Transit Commission's order sets the cost of grade crossing elimination work at $30,700,000, with $12,280,000 payable by the state, $3,070,000 by the city and $15,350,000 by the railroad.

The Board of Estimate of New York now has under consideration an agreement submitted several weeks ago by the railroad regarding settling of the status of land transfers in the re-location of rights of way, erection of the proposed elevated express highway along the riverfront and other city planned improvements. It is expected that favorable action will be taken on this agreement. Additional details concerning the project were published in the January 26, issue of the *Railway Age*.

Flagmen Required at Memphis Crossings

In a case appealed from judgment for the plaintiff in a crossing accident case from the Tennessee Supreme Court, the only question before the Supreme Court of the United States was the validity of an ordinance of Memphis requiring all railroads on every street crossed by their trains to keep a flagman constantly on duty. The state Supreme Court, while it stated that the plaintiffs, occupants of an automobile which was run down, both knew the railway did not maintain a flagman, and were grossly negligent in going upon the track held, however, that the proximate cause of the injuries was the railway's failure to comply with this ordinance. The railway had substituted for the flagman, an automatic electric signal set in operation by the train. The railway contended that the ordinance, passed in 1880, was no longer valid in view of the modern improvement. The state court, however, said that the crossing in question was a dangerous one, with pretty constant travel and held that as applied to such a crossing it could not be said that the ordinance was so undisputably unnecessary and unreasonable that the legislative judgment could be overruled. The Supreme Court of the United States took the same view and affirmed judgment for the plaintiffs. Nashville, C. & St. L. vs. White. Decided February 18, 1929. Opinion by Mr. Justice Holmes.

Cab Signals New York to Washington

The Interstate Commerce Commission announces that, following conferences with officers of the Pennsylvania, in connection with the Commission's investigation of the recent collision at Short Lane, Md., (January 17) the Commission has been informed by the railroad company that visual and audible cab signals will be installed, for use on all trains between Philadelphia and Washington; and that the work will probably be completed within the present calendar year. The cost of this work will be approximately $1,700,000.

This improvement will cover the whole of the line between New York and Washington, except the New York Division; and on the New York Division the work of installing the Union continuous automatic cab signal system has already been begun. This latter work applies to the steam locomotives which constitute the motive power of all trains between Manhattan Transfer and North Philadelphia. The line from Pennsylvania Terminal, New York City, to Manhattan Transfer, nine miles, already has a mechanical automatic train stop. As to the line between North Philadelphia and Broad Street, five miles, where a part of the trains are electrically propelled, the announcement says nothing; but presumably that short section is being included in the plans. The Commissioner's report on the Short Lane collision is noticed in another column of this issue.

Mechanically-Operated Firedoors Required

The Interstate Commerce Commission on March 6 issued its report and order in the firedoor case, instituted by complaints filed by the Public Utilities Commission of Ohio, the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen, finding that the application and maintenance of mechanically-operated firedoors is necessary on all steam locomotives, not burning oil as fuel, in order that they may be used with safety and without unnecessary peril to life and limb. Such doors have been applied voluntarily by a majority of the carriers, the report by Commissioner McManamy says. The commission orders: That the rules and instructions for the inspection and testing of steam locomotives and tenders be amended by adding thereto the following rule:

118 (*a*). Each locomotive shall have a mechanically operated firedoor (or firedoors if more than one is used) so constructed and maintained that it may be operated by pressure of the foot on a pedal, or other suitable appliance, located on the floor of the cab or tender at a suitable distance from the firedoor, so that it may be conveniently operated by the person firing the locomotive: *Provided*, That locomotives burning oil fuel may have in lieu of the mechanicially operated firedoor a hand operated firedoor of suitable construction and so arranged that it may be securely bolted in closed position while the locomotive is being used.

(*b*) Firedoors shall be maintained in a safe and suitable condition for service.

Paragraph (*a*) is to be effective on and after April 1, 1929, on new locomotives, and as to locomotives in service paragraph (*a*) is to be effective when and after the locomotives receive class 4 or heavier repairs as defined by the United States Railroad Administration. Al locomotives are to be equipped as required by not later than July 1, 1931.

Paragraph (*b*) is effective on and after April 1, 1929.

Cause Removed to Federal Court —Non-resident Railroad

The Supreme Court of the United States holds that, where a switchman employed by the Michigan Central was killed in Michigan and his widow removed to Missouri, where she was appointed administratrix of his estate and brought suit in the St. Louis Circuit Court under the Federal Safety Appliance Act and the Federal Employers' Liability Act, the railroad company was entitled to have the cause removed to the federal court. The Michigan Central, a Michigan corporation, has no line in Missouri, and has never done any business there, except soliciting freight. For this limited purpose it maintains an office at St. Louis. Upon its agent in charge of that office the sheriff made service of the summons.

The plaintiff had become a resident in Missouri after the injury complained of, but before instituting the action. For aught that appears, her removal to St. Louis shortly after the accident was solely for the purpose of bringing the suit, and because she was advised that her chances of recovery would be better there than they would be in Michigan. The mere fact that she had acquired a residence within Missouri before commencing the action does not make reasonable the imposition upon interstate commerce of the heavy burden which would be entailed in trying the cause in a State remote from that in which the accident occurred and in which both parties resided at the time.

Michigan Central vs. Mix, Decided February 18, 1929. Opinion by Justice Brandeis.

Waterways Policies Approved

Dwight F. Davis, Secretary of War, in the Coolidge Administration, on March 1 made application to the Secretary of the Treasury for the issuance of a warrant to the Inland Waterways Corporation for $2,500,000 to cover the subscription of the United States for capital stock of the Inland Waterways Corporation authorized by the War Department appropriation bill.

The Secretary also approved a general policy for the future development of the Inland Waterways Corporation, as proposed to him by the chairman and executive of the Inland Waterways Corporation, Major General T. Q. Ashburn. This policy provides for the immediate expenditure of approximately $2,500,000 for the purchase of about 50 standard type barges adapted to channels of six or nine feet. These barges will have a capacity of 1,000 tons on a 6-ft. channel, and a little over 2,000 tons on a 9-ft. channel.

Another action by the Secretary was the approval of a general policy for the development of three types of towboats to meet the varying conditions of the Upper Mississippi, the Missouri, the Illinois and the Lower Mississippi Rivers.

A special type of towboat of 1,000 H.P. or more, to operate on a 6-ft. channel, will be the standard type which will ply between Kansas City, St. Paul, Chicago and St. Louis. Another towboat of more powerful type will be developed to ply between St. Louis and Memphis. All the present towboats will operate between Memphis and New Orleans.

The new general policy provides for the standardization of all new equipment to be built, with a view to its utilization on the present channels, and its application to a 9-ft. channel on the Upper Mississippi, the Missouri and Illinois rivers, if and when such channels are completed.

Development will be undertaken at once of a new towboat of standard type for operation on the Upper Mississippi, to be the model for any boats to operate on a 6-ft. channel.

Report of Director General of Railroads

President Coolidge, shortly before the adjournment of Congress, transmitted to it the annual report of A. W. Mellon as director general of railroads, describing the progress made during the year 1928 in winding up the affairs of the Railroad Administration.

During the year 1,080 suits and claims involving $5,783,546 were finally disposed of, viz, 638 suits against the director general for $4,706,879, at a cost of $271,752, or approximately 5½ per cent, and 442 suits and claims on behalf of the director general for $1,076.667 from which there was collected $485,645, or approximately 45 per cent. From all sources, other than from the sale of securities, the total collection for the year was $576,053.

Definite obligations of carriers liquidated during the year amounted to $16,208,137, and Liberty loan bonds amounting to $492,450 were redeemed by the Treasurer of the United States.

On January 1, 1929, there still remained unadjusted 1,201 suits, claims, and proceedings against the Director General, amount involved $6,242,889, and 519 by him, amounting to the sum of $1,965,618, a total of 1,720, aggregating $8,208,507.

In addition to the foregoing there are a large number of miscellaneous matters, including numerous claims, in which the Director General is interested, pending before the Internal Revenue Department, relating to the adjustment of taxes from various carriers for the federal-control period, concerning which it is necessary for the Railroad Administration to ascertain from examination of the carriers' accounts the amount of such taxes assumed and paid by him under the terms of the federal control act and the contracts between him and the carriers, and to prosecute the same to a final determination.

New Canal Route and Facilities To Be Investigated

The joint resolution introduced by Senator Edge, of New Jersey, proposing a survey of a route for a new interoceanic canal through Nicaragua, was passed by both Houses of Congress on March 1, after the Senate had adopted amendments made in the House to the bill as previously passed by the Senate which provides first for an investigation of the practicability of increasing the facilities of the Panama Canal.

The resolution authorizes the President to cause to be made, under the direction of the Secretary of War and the supervision of the Chief of Engineers, and with the aid of such civilian engineers as the President shall deem advisable, a full and complete investigation and survey for the purpose of ascribing the practicability and the approximate cost of constructing and maintaining (1) such additional locks and other facilities at the Panama Canal as may be necessary to provide for the future needs of interoceanic shipping; and (2) any other route for a ship canal be-

tween the Atlantic and the Pacific Oceans.

The President is also authorized to complete investigation and survey for the purpose of revising and bringing down to date the reports of the Isthmian Canal Commission with respect to the practicability and advantages and approximate cost of constructing a canal across Nicaragua, and for the purpose of obtaining all additional available information respecting (1) the most practical route for an interoceanic ship canal across the Republic of Nicaragua by way of the San Juan River and the Great Lake of Nicaragua, or by way of any other route over Nicaraguan territory, including suitable locations for harbors at each end of the termini thereof; (2) the practicability and approximate cost of constructing and maintaining such canal; and (3) the approximate cost of acquiring all private rights, properties, privileges, and franchises, if any, included in or necessarily affected by such canal route.

An appropriation of $150,000 for the purpose also was authorized and later passed. The President signed the resolution on March 2.

Canadian Branch Line Disagreement

As was indicated in the House of Commons at Ottawa there is, out of the extensive branch line programs of the Canadian Pacific and the Canadian National before Parliament this session, only one line which is contentious as between the two roads and this is the Melfort line in northeastern Saskatchewan. On this and the other vital question of placing the two roads on the same footing in regard to the time within which they should complete branches some important statements were made at Ottawa last week in the House Committee on Railways, Canals and Telegraph Lines. A large number of the principal officers of the two roads are before the committee whose meetings will occupy many days of this session in considering the various branch line bills before the latter are finally submitted to the House for third reading. Then, after passage by the House, they will have to run the gauntlet of the Senate and the railway committee of that chamber.

Sir Henry Thornton, president of the Canadian National told the committee that his company road claimed this territory by virtue of the fact that 12 years ago the old Canadian Northern had already started building there and had already graded 19 miles of the 67-mile project. Four years ago, this line had been one which had been presented to the government in the company's program, but with others it had been rejected by the Senate. He felt that the railway had given ample evidence of its good faith in purposing to carry on with the construction.

E. P. Flintoft, counsel for the Canadian Pacific, declared that last year his company had carried on surveys, upon the representations of the inhabitants of the district, and on their declarations that the C.N.R. did not contemplate building a line there. He felt that the committee should grant the charter to the C.P.R. in order that it might keep faith with the public.

Robert Gardiner, leader of the Progressives, asked if Sir Henry Thornton were satisfied that he was on a parity with the C.P.R. in respect to branch lines. The C.N.R. had three years wherein to construct its lines, but the C.P.R. was allowed longer than that.

Sir Henry declared that the C.N.R. brought down its program every three years, but the C.P.R. charters were from two to five years. It was within the discretion of Parliament to remove that disability. The C.P.R. was now asking for further extensions to charters granted ten years ago. The lines had not yet been built. It seemed to him that both railways should be on the same level.

Mr. Flintoft said that his opinion was that the C.N.R. had a distinct advantage over the C.P.R. The latter had to give five weeks' public notice before its bills were introduced, and had to get railway commission authority where the whole question was carefully considered by the board and its engineers. After the general location was approved, a detailed location plan had to be drawn up which again the board had to approve and the public were given the opportunity of voicing their views. The C.N.R. had corporate authority to build, but the C.P.R. had not. The C.N.R. went to its shareholders, which were Parliament, for its money. Once it got the minister's approval it was "over the fence."

THE GREAT SOUTHERN RAILWAY OF IRELAND, as heretofore noted in the *Railway Age,* is converting a large section of the Midland Great Western from double track to single track, and according to an article in Modern Transport, has contracted with the Railway Signal Company, Fazakerley, near Liverpool, England, to furnish the electric train stop equipment which will be used for single track operation. Under the new plan the several lines will thus be operated by the manual block system as at present. The longest single section to be changed is that from Plonsilla, near Dublin, westward to Ballinasloe, 84 miles. On this line, the normal lengths of block sections, beginning at the east end, are approximately four miles, three miles, four, two, five, three, five, six, four, four, etc. Beyond Mullingar there is a short section of double track; there is also a short section at Athlone. At meeting places, one of the two present main tracks will be converted into a siding for convenient meeting of trains, and there will be 14 of these between Plonsilla and Ballinasloe. Whitaker exchanging apparatus for staffs will be put up at all meeting points. The practice of closing some of the signal stations during certain parts of the day will be continued, this arrangement resulting, in some cases in closing five stations between the two left in service; but in such lengthened sections, freight trains will be run under permissive signals. The total length of line to be changed is 127 miles. A number of short sections of road in the Great Southern system have been thus changed from double track to single track within the past few years.

Traffic

The Akron (Ohio) Traffic Club has elected officers for the year 1929 as follows: President, J. C. Williams, (A. C. & Y.); Vice president, E. L. Morgan, (Miller Rubber Company); Treasurer, J. M. South, (Penn.); Secretary, H. L. Sovacool, (A. C. & Y.).

The new fruit and vegetable freight house of the Pennsylvania at Pittsburgh, Pa., was opened for business on March 4. The building is at Twenty-first and Pike streets and is 1000 ft. long by 200 ft. wide. The auction rooms are on the first floor. The building contains also rest rooms and a restaurant. The auction sales of fruit and vegetables on the first day aggregated 36 carloads.

Acting on applications of the West Jersey & Seashore (Pennsylvania System) the Public Utility Commissioners of New Jersey have assented to the discontinuance of the agencies at Swain and Wildwood Junction. The application for authority to discontinue the agency at Stone Harbor is denied. At Stone Harbor the passenger business is lighter in summer than in the winter and the salary of the agent, which, during July, August and September is $158.25 monthly is during the remainder of the year $74.13. The commissioners hold that by this reduction in the cost of service, the ratio of expense to revenue for the whole year is kept within reasonable limits. Petitions to discontinue the agencies at Malaga and Anglesea were denied as was the petition of the Pennsylvania Railroad to abolish the agency at Allenwood.

Careful Loading and Billing

The Central of Georgia, in a circular acquainting the public with its efforts to secure greater efficiency in the conduct of its freight business, states that the records of "exceptions" at freight stations show that Chattanooga in the year 1928 loaded 1,258 tons of l.c.l. freight for each instance of a mistake in loading or billing; that is to say, in the forwarding of about 249 cars of freight, this station made a perfect record; no report of over, short or damage being received in more than one out of each 250 cars. Less remarkable records were made by other large stations; and of the smaller stations, six went through the year with no exceptions whatever: Cuthbert, Griffin, Sylacauga, Athens, Dothan and Troy. Cuthbert has had no exceptions since 1925, during which time the station has loaded 19,058 tons. Claims paid for loss, damage or delay on freight in 1928, by the Central of Georgia amounted to only 57 cents for each $100 of gross freight receipts.

Lake Cargo Case Declared Moot

The Supreme Court of the United States on March 5 declined to decide the question as to the validity of the Inter-

state Commerce Commission's order of February, 1928, in the lake cargo coal rate case, by which the railroads serving the southern district coal fields were directed to cancel tariffs proposing a reduction of 20 cents a ton in their rates on lake cargo coal. The court declared that the question had become moot by reason of the fact that compromise tariffs had gone into effect on January 1 by which the southern roads had increased their rates 10 cents while the roads serving the northern district reduced their rates 10 cents, thus establishing a differential of 35 cents a ton in favor of the northern districts, whereas the commission had sought to establish a 45-cent differential. The Supreme Court remanded the case to the federal court for the southern district of West Virginia, which had enjoined the commission's order, for a dismissal of the bill of complaint filed by the coal operators who had sought the injunction. Following the argument in the case the court had asked the attorneys to file a brief on the question as to whether the case was not moot and most of them had joined in a brief which took the position that it was not, because a dissolution of the injunction would require a re-establishment of the $1.91 rate from the southern district, which the southern roads desired to reduce.

Hoover Inauguration Crowds

The number of passengers carried to and from Washington for the inauguration of President Herbert Hoover—March 3, 4 and 5—appears to have been greater than on any previous inauguration, while at the same time automobile and motor coach traffic to and from the city was unprecedented in volume. The Pennsylvania's plans on Sunday and on Monday forenoon, included at least 27 special trains besides 67 special cars on regular trains; and returning to New York on Monday its midnight train was run in ten sections.

According to the New York Times, the outward movement from the Union station (north, south and west) from 2 p.m. to midnight on Monday, aggregated 127 trains. But the yardmasters could not keep up with the crowds and "until long after midnight chaos reigned at every point of departure from the city. At the Union Station a horde of hungry, rain-soaked visitors mulled about in search of food and information as to places where it was to be obtained outside of the crowded station restaurant. Above all they strove to buy tickets and make their trains for home, or, failing that, to make reservations at the earliest possible moment. On every track were waiting trains, held in anticipation of the emergency. No accidents or breakdown occurred.

"The situation improved as each train pulled out, but conditions were still far from normal on Tuesday. Because of the rain, the rush to leave the city began unusually early, people leaving the Capitol grounds for the Union Station even before the end of the inaugural address."

Equipment and Supplies

Locomotives

THE ILLINOIS TERMINAL RAILROAD SYSTEM is inquiring for three Mikado type locomotives.

THE NEW YORK ONTARIO & WESTERN is inquiring for 10 4-8-2 type locomotives and six extra tenders.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 14 of the 4-6-4 type locomotives and one 4-8-4 type locomotive from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of February 9.

THE BOSTON & MAINE has given an order to the Lima Locomotive Works for five of the 2-8-4 type locomotives similar to the 20 ordered late in 1927 which were built last year. The new locomotives show an increase in steam pressure as compared with the previous lot from 240 to 250 lb. They will be equipped with one-piece cast steel beds and cylinders. The tenders are also to be larger; they show an increase from 12,000 gal. of water and 18 tons of coal to 18,000 gal. of water and 24 tons of coal; they also will have cast steel water-bottom frames. The locomotives equipped with boosters will give a total tractive force of 81,400 lb. The cost of each locomotive will be about $100,000.

Freight Cars

THE SOUTHERN PACIFIC is inquiring for 50 caboose cars.

THE MISSISSIPPI CENTRAL is inquiring for 50 automobile cars of 40 tons capacity and 50 box cars of 40 tons capacity.

THE ST. LOUIS SOUTHWESTERN has ordered 15 caboose car underframes from the Virginia Bridge and Iron Company.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 500 steel underframes for box cars which will be built in its Armourdale, Kan. shops.

THE NORFOLK & WESTERN has given a contract to the Ralston Steel Car Company for rebuilding 1,000 all steel hopper Cars, of 57½ tons' capacity.

THE TEXAS & PACIFIC has ordered 700 automobile cars from the Pressed Steel Car Company, 300 automobile cars from the American Car & Foundry Company, 500 stock cars and 50 caboose car underframes, from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of February 2.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed orders for 4,150 freight cars as follows:

1,000 automobile box cars from the Bettendorf Company
1,000 ballast cars from the General American Car Company
650 stock cars from the Standard Steel Car Company
500 automobile cars from the Pullman Car & Manufacturing Corporation
200 automobile cars from the Pacific Car & Foundry Company
300 ore cars from the Pressed Steel Car Company
150 flat cars from the Pressed Steel Car Company
350 flat cars from the Ryan Car Company

Inquiry for this equipment was reported in the *Railway Age* of February 2.

Passenger Cars

THE SOUTH AUSTRALIAN RAILWAYS have ordered eight Model 75 gasoline rail motor cars, from the J. G. Brill Company.

THE ERIE is now inquiring for 30 suburban coaches and 15 extra locomotive tenders with a capacity of 20,000 gal. of water and 28 tons of coal.

THE BALTIMORE & OHIO is inquiring for five colonial dining cars and seven parlor cars. This is in addition to its inquiry for 125 cars reported in the *Railway Age* of March 2.

THE CHESAPEAKE & OHIO has ordered 12 all-steel express cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of February 16.

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered a 73-ft. passenger trailer car from the J. G. Brill Company, in addition to the rail motor car ordered from the same builder and reported in the *Railway Age* of March 2.

THE ILLINOIS CENTRAL has ordered 10 coaches and eight chair cars from the American Car and Foundry Company and six mail and baggage cars, five baggage and express cars and five horse express cars from the St. Louis Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 19.

Iron and Steel

THE SOUTHERN PACIFIC has ordered from the United States Steel Products Company, about 21,000 tons of steel for a bridge over Suisun bay, near San Francisco, Cal. The erection work is to be carried out by the American Bridge Company.

Signaling

THE MISSOURI PACIFIC has contracted with the General Railway Signal Company to install automatic block signals on 220 miles of its lines as follows: Nearman, Kan., to Atchison, 36 miles; Osawatomie to Coffeyville, 138 miles; Urania,

La., to Alexandria, 46 miles. Color-light signals will be used.

THE TENNESSEE COAL, IRON & RAILROAD COMPANY has ordered from the Union Switch & Signal Company, materials for the installation of a dispatcher control system on its lines between Pratt City, Ala., and Ensley. The control machine will be placed in the dispatcher's office at Ensley. The order includes three dual control switch movements and 11 color-light signals.

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company an electric interlocking, 148 working levers, to be installed at Collinwood Ohio; also a similar equipment for Berea, Ohio, 105 working levers. These two improvements, which together will require 110 switch machines, are required in connection with the construction of tracks in connection with the new Cleveland Union passenger terminal.

THE DENVER & RIO GRANDE WESTERN plans the installation of automatic block signals during 1929 on 242 miles of main line at an estimated cost of $658,000, a project which will complete the block signaling of all single track between Denver, Colo., and Salt Lake City, Utah. This company also plans to install 33 miles of centralized train control.

THE CHICAGO, BURLINGTON & QUINCY has ordered from the General Railway Signal Company, material for the installation of a G. R. S. dispatcher system between Steward Junction, Ill., and Flag Center, 10 miles. The dispatching machine will have 18 working levers and the plant will include four cross-overs, two single switches and four derails.

THE NORFOLK & WESTERN has ordered from the Union Switch & Signal Company material for a dispatcher control system to be installed on its line at Vicker, Va. The order includes position-light signals, both high and dwarf, and electro-pneumatic switch-and-lock movements. The control machine will be placed at Walton, 3½ miles west of Vicker.

Machinery and Tools

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for a 10-ft. shear for ¾-in. plates and a 36-in. drill press.

SIX HUNDRED SIXTY-NINE NEW FIRMS, representing an estimated investment of approximately $20,760,315, located their plants along the Missouri Pacific Lines during 1928. While the total investment of the new concerns is slightly under the record established in 1927, ($23,245,000) the number of firms established this year sets a new record and surpasses the best previous year, 1926, when 635 concerns were reported. The new industries have a combined estimated annual output of 164,050 carloads, exceeding the 1927 figure by 68,715 cars. To serve the new industries it has been necessary to lay 156 additional tracks, totaling 23.94 miles.

Supply Trade

T. G. Dalton, formerly sales engineer for the National Boiler Washing Company has been appointed sales representative of the **Railway Engineering Equipment Company,** Chicago.

H. J. Clarity has been appointed representative of the **Lehon Company** at 419 South Fourth street, Minneapolis, Minn. **Henry W. Dickerson** has been appointed representative at 923 Mutual building, Richmond, Va.

A. W. French & Company, Chicago, has been merged with the **Blaw-Knox Company,** Pittsburgh, Pa., and subsidiary companies. The personnel and policies of A. W. French & Company will continue as heretofore and its plant and sales organization will function as a separate division of the Blaw-Knox Company.

E. C. Afflerbach, Second National Bank building, Houston, Texas, has been appointed district sales representative in Texas and **Denyven & Linn,** 250 Stuart street, Boston, Mass., has been appointed district sales representative in the New England states, for the **Woodings Forge & Tool Company,** Verona, Pa.

The Prest-O-Lite Company, Inc., New York, has opened an acetylene gas plant at 925 Hughes street, Houston, Tex. It will supply dissolved acetylene for welding and cutting to local industry. **A. J. Harrower** is superintendent of the new plant and **H. F. Sautter,** with headquarters at Dallas, is district superintendent.

A. W. Fields, formerly district manager for **James B. Sipe & Company,** at St. Louis, Mo., has been appointed manager of transportation division for the entire United States, with headquarters at Pittsburgh, Pa. Mr. Fields is succeeded at St. Louis by **W. H. S. O'Brien,** formerly sales representative of the Waugh Equipment Company.

At the annual meeting of the **Taft-Peirce Manufacturing Company,** Woonsocket, R. I., **Frederick S. Blackall, Jr.,** was elected vice-president and general manager of the company. Mr. Blackall, Jr., is the son of the late Frederick S. Blackall who for many years, until his death, was vice-president and general manager of the company. Upon his death in October, 1928, his son succeeded him as general manager.

P. S. Jones, manager of the Pittsburgh, Pa., office of **Cutler-Hammer, Inc.,** has been appointed manager of the New York district office, to succeed **C. W. Yerger,** who leaves the company to accept a position with the Hanson-Van Winkle-Munning Company, Matawan, N. J. **T. S. Towle,** sales engineer of the Pittsburgh office, became manager at Pittsburgh. **G. E. Hunt,** representative in the Philadelphia office, has been placed in charge of distributors' sales.

C. L. Peirce, Jr., vice-president of **Hubbard and Company,** Pittsburgh, Pa., has been elected president to succeed **John W. Hubbard,** who has been elected chairman of the board. **Joseph V. Smith,** manager of the Pittsburgh factory has been elected vice-president in charge of electrical divisions. **W. R. Pounder,** manager, has been elected vice-president. **W. W. Glosser,** New York district sales manager, has been promoted to Pacific coast manager and will be succeeded by **C. H. Keen,** New England sales representative. **R. M. Waggoner,** sales engineer, has been promoted to assistant sales manager. **R. G. Robbins,** advertising manager, has been promoted to assistant sales manager.

William P. Carney, sales manager of the **Magnus Company,** has been elected vice-president to succeed William H. Croft, who has been elected president. Mr. Carney was born at Richmond, Ind., in 1885, and entered railway service as a stenographer with the Pennsylvania.

William P. Carney

In 1902 he entered the employ of the Magnus Company as a stenographer and in 1910 was promoted to assistant to the vice-president at New York. In 1916 he was transferred to Chicago and in September, 1926 was promoted to sales manager, which position he has held until his recent promotion.

George E. Scott, vice-president of the **American Steel Foundries,** Chicago, has been elected president to succeed **Robert P. Lamont,** who has resigned to become secretary of commerce of the United States. Mr. Scott was born in St. Louis, Mo., where he started his business career with the Simmons Hardware Company. In 1901 he became vice-president of the Simplex Railway Appliance Company and when this company was acquired by the American Steel Foundries in 1905, he was appointed vice-president, which posi-

tion he has held until his recent election. During the war, he was drafted by Henry P. Davison to serve in the American Red Cross and was with that organization from May, 1917, until April, 1919, serving as general manager and a member of its war council. He is also a director of the Harris Trust and Savings Bank, the H. Channon Company and the Griffin Wheel Company.

George E. Scott

Obituary

F. E. Schmitz, who has been in charge of the mechanical department of the **Union Draft Gear Company** since December, 1910, died in Chicago on February 24 from pneumonia.

Benjamin A. Hegeman, Jr., president of the National Railway Appliance Company, died suddenly on March 6 at his home in New York City at the age of 69.

William N. Cornell, manager of the Railway Underwriters, died at Wilmette, Ill., on February 26. Mr. Cornell had been ill for about two months with heart complications following an attack of influenza.

Myron C. Atwood, president and general manager of the Western Wheeled Scraper Company, Aurora, Ill., died in that city on February 26, after a lingering illness. He was born in Kane county, Ill., on August 24, 1863, and entered railway service as a ticket agent and operator for the Chicago, Burlington & Quincy. in 1880. From October, 1884, to February, 1888, he was an agent at Earlville, and from February, 1888 to December, 1891 he was an agent at Ottawa. In January, 1892, he was appointed commercial agent at Aurora and on October 1, 1903 he entered the employ of the Fulton County Narrow Gauge (C. B. & Q.) as superintendent and general freight and passenger agent. In 1905 he was also elected vice-president, which position he held until 1906 when he resigned to become assistant manager of the Western Wheeled Scraper Company. In 1910 he was promoted to general manager and in 1925 was elected president and general manager which position he has held until his death.

Myron C. Atwood

Chicago Railway Equipment Company

The annual report of the Chicago Railway Equipment Company for 1928 shows undivided profits of $751,970, as compared with $860,920 in 1927. Of this amount $209,774 was paid as dividends on the 120,000 shares of preferred stock.

Interstate Iron & Steel Company

The annual report of the Interstate Iron & Steel Company, Chicago, for the year ending December 31, 1928, shows a net profit for the year of $1,023,868 as compared with $409,783 in 1927. Earnings, after deducting all expenses, state and federal taxes and reserves except plant depreciation, interest, bond discount and expense, totaled $2,078,462 as compared with $1,190,810 in 1927. The reserve for depreciation was $744,544 in 1928 and $532,447 in 1927. The interest on bonds and notes paid and accrued and the discount and expense on the bond issue written off during the year amounted to $310,048 compared with $248,579 in 1927.

In addition to the regular dividends on the preferred stock, dividends at the rate of 4 per cent per annum were paid upon the common stock and the requirements of the preferred shares sinking fund were fully met. An extra dividend of $1.50 a share on the common stock was declared.

The continuous billet and general utility mill, started in the summer of 1927, was placed in operation on May 1, 1928. The two original 50-ton open hearth furnaces were abandoned as obsolete during 1928 and one new 100-ton furnace provided to take the place thereof. Plans under way, contemplate the addition of another 100-ton open hearth furnace during 1929. The directors have authorized the purchase and construction of an additional rolling mill, and it is hoped that such additions may be completed, ready for operation early in 1930.

American Locomotive Company Annual Report

Net income of $4,171,296, after allowance for depreciation and federal taxes, was reported by the American Locomotive Company for the year 1928 according to the annual report issued on February 25. The foregoing compares with a 1927 net, after depreciation and taxes, of $6,391,278. The 1928 net was equivalent to $1.92 per share on the 770,000 shares of common stock outstanding as against a comparable 1927 figure of $4.80 per share.

The preferred dividends during the year required disbursements totaling $2,695,000 while additional dividends of $6,160,000 were paid on the common stock. Of this latter the 1928 earnings provided $1,476,296 while the remaining $4,683,704 was drawn from surplus.

The excess of current assets over current liabilities on December 31, 1928, was $44,962,863. The company had no loans payable and had in its treasury $32,650,090 in cash and marketable securities, of which $20,180,025 was in United States Government obligations; $5,388,351 in railway equipment trust certificates; $1,547,428 in bonds of the Canadian Government; $769,691 in other securities; $2,000,000 in call loans, and $2,764,596 in cash on hand and in banks.

Selected items from the consolidated income statement follow:

	1928	1927
Net earnings from all sources, including tax refunds, after deducting manufacturing, maintenance and administrative expenses	$5,793,192	$8,512,324
Depreciation on plants and equipment	1,507,096	1,694,296
	4,286,096	6,818,028
Accrual for Federal taxes.	114,800	426,750
Profit for the year	4,171,296	6,391,278
Dividends—Preferred stock	2,695,000	2,695,000
Common stock	6,160,000	6,160,000
Deficit after Dividends	4,683,704	2,463,723

William H. Woodin, chairman of the company, in his remarks to the stockholders says "The outlook for the locomotive business in 1929 is much more promising. On January 1, 1929, the company had on its books a total of $18,978,879 of unfilled orders as compared with $2,658,237 on hand on January 1, 1928."

Trade Publications

JACKLIFTS.—Lift trucks, ranging in capacities from 2,000 lb. to 10,000 lb., are illustrated in the Special Lift Truck Edition of the Jacklift and Stacker Practice bulletin prepared by the Lewis-Shepard Company, 168 Walnut street, Boston, Mass.

ENGINE AND POWER UNITS.—The Waukesha Motor Company, Waukesha, Wis., illustrates and describes in a 20-page booklet engine and power units which, while developed during 1928, are now offered as the latest developments of their respective types. The booklet is entitled "What's New with Waukesha"

MODERN METAL HANDLING.—Cutler-Hammer, Inc., 195 Twelfth street, Milwaukee, Wis., photographically presents in

its booklet "Modern Metal Handling Methods" a number of applications of Red Top lifting magnets in foundries, junk yards, steel plants and miscellaneous industries. The constructional features of these magnets are described in detail.

ROTARY GEAR PUMPS.—Recognizing the need among buyers for a catalogue giving complete pumping information, the George D. Roper Corporation, Rockford, Ill., has prepared and is distributing a loose-leaf catalogue, known as No. 54, in which Trahern rotary pumps having capacities of from one to 250 gallons per minute are illustrated and described. These pumps are used by the railroads in machine shops and other departments.

UNIT HEATING.—A new heater bulletin, published by the L. J. Wing Mfg. Company, 154 West Fourteenth street, New York, outlines briefly the history and development of unit heating and shows the essentials necessary for good factory heating and how the Wing method meets them. The bulletin also contains full description, engineering data and information on Wing Featherweight unit heaters.

GASOLINE LOCOMOTIVES.—General and condensed descriptions of Milwaukee Type H gasoline locomotives, in which many improvements have been incorporated, are contained in Publication No. 150 issued by the Milwaukee Locomotive Mfg. Company, Milwaukee, Wis. The condensed descriptions cover locomotives weighing from four to twenty tons. General instructions for the operation and care of Type H four-speed gasoline locomotives are given in Publication No. 151.

TIMKEN-BEARING APPLICATION.—The Timken Roller Bearing Company, Canton, Ohio, in its latest publication, entitled "Wherever Wheels and Shafts Turn," covers in some detail the general subject of the application of Timken bearings to various types of automotive, railways and industrial equipment. The book, which is attractively bound in blue leather, is divided into eight sections, the eleven pages of Section IV dealing specifically with Timken bearings in railway equipment The forty-eight pages of Section VIII contain technical information on bearing mountings and installations.

THE NEW YORK CENTRAL ELECTRIFICATION.—This is the title of a 36-page illustrated booklet recently issued by the General Electric Company, Schenectady, N. Y., in which the development of the 600-volt direct current electrification as used on the New York Central is traced from its beginning up to the present time. Numerous photographs show the various types of locomotives used in the electric service, as well as power houses and related equipment. Important data and characteristic curves are given for seven different types of locomotives, and pages at the back of the booklet give wiring diagrams of the principal types. Weights and dimensions of oil-electric locomotives for both freight and passenger service are also given.

Construction

Western Pacific Program

The 1929 program of the Western Pacific and its subsidiary lines for improvements in roadway and equipment will involve the expenditure of approximately $3,500,000. This program does not include projects for the construction of new lines either under way or decided upon. It contemplates an expenditure for improvements and maintenance, aside from ordinary maintenance, of $3,000,000, of which $1,400,000 will be chargeable to operating expenses and $1,600,000 to capital account. Principal items in the program are: Improvements in freight train equipment, etc., $1,000,000 (orders for 250 automobile cars, 50 flat cars and 50 tank cars have been placed); bank widening and ballasting, $890,000; extension of yards and lengthening of passing tracks, $230,000; and three steel bridges in Nevada, to replace wooden structures, $85,000.

The Sacramento Northern Railway, which recently acquired the properties of the Sacramento Short Line, has a program for the expenditure of $318,000 of which $86,000 is to be charged to operating expenses and $252,000 to capital account. This does not include $600,000 required to complete the construction of the 16-mile Holland branch, which is expected to be ready for operation about May 1. The program for the Tidewater Southern Railway totals $165,000.

BANGOR & AROOSTOOK.—A contract has been awarded the Roberts and Schaefer Company for the construction of an 80-ton reinforced concrete Simplex coaling plant with weighing facilities and ground storage facilities at Derby, Me.

BOSTON & MAINE.—This company plans the construction of a new 16-story, 500-room modern hotel building to connect with the new North Station in Boston, Mass. Erection of the hotel will complete the $10,000,000 terminal development in Causeway street of which the North Station is the central unit. The hotel building will cost approximately $2,500,000 and will be operated as one of the Manger group of hotels. It will be of fireproof steel construction, finished in buff brick, trimmed with stone to harmonize with the other buildings in the group.

BOSTON & MAINE.—The New York Public Service Commission has directed the elimination of the West street crossing on the lines of this road in Johnsonville, N. Y., by the construction of an underpass, the project to cost approximately $118,000.

CHICAGO, BURLINGTON & QUINCY.—This company, in conjunction with the Union Pacific, is planning the construction of a viaduct on Twenty Third Street, Denver, Colo. It will be 2,500 ft. long and will cost approximately $350,000. The city will pay one third and the railroads two thirds of the cost.

DELAWARE, LACKAWANNA & WESTERN.—The New York Public Service Commission has re-affirmed its recent order directing the elimination of the Cherry Valley turnpike crossing on this road near its Sangerfield, N. Y., station.

GREAT NORTHERN.—A contract has been awarded the Ogle Construction Company for the construction of two 500 ton capacity, three track, electrically operated, steel coaling stations; one to be constructed at Williston, N. D., and another at Whitefish, Mont.

NATIONAL OF MEXICO. — Company forces have begun the construction of the substructure of a bridge over the San Juan river at Cuatotolopam, Ver. C., on the Rodriguez Clara-San Andres Tuxtla line. The bridge, which will consist of one 150-ft. span of the present bridge and two new through riveted Pratt trusses, each 200 ft. long, replaces a bridge of two 150-ft. Pratt trusses, one half-through 72-ft. plate girder and one through draw truss, 204 ft. 9 in. long, which was undermined and destroyed by high water. Company forces have under construction over the Santiago river near Ocottan, Jal., on the Trapuato-Manzanillo line, a bridge consisting of one through pin-connected Pratt truss, 204 ft. 9 in. long, and one 40-ft. deck span. The new bridge replaces a temporary bridge of 20 spans which was partially destroyed by debris in the Santiago river and the total cost of the work is estimated at $142,000. A contract has been let to the American Bridge Company, Chicago, for the construction of the superstructure.

NEW YORK CENTRAL.—The estimate of cost amounting to $167,000, for the elimination of the Mansion street crossing on this road's lines in Coxsackie, N. Y., has been approved by the New York Public Service Commission. The estimate is exclusive of land and damages. The Commission also approved an estimate of cost for the elimination of a crossing in Voorheesville, N. Y., at an approximate expenditure of $15,000.

PENNSYLVANIA.—According to an unconfirmed report, this company is contemplating the construction soon of a new railway express terminal at the western end of the South street bridge near the east end of Franklin field in Philadelphia to replace the three terminals now in use at Eighteenth and Market streets, Forty-seventh street and Woodland avenue, and at the North Philadelphia station of the road. The new terminal, which it is reported will cost $3,000,000, will have a capacity for 90 cars and is expected to be ready for occupancy in 1930. The terminal will be

used by the Railway Express Agency, Inc.

QUANAH, ACME & PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of its own line between Quanah and Acme, Tex., 3.97 miles, and the abandonment of trackage rights over the Fort Worth & Denver City.

SAN ANTONIO, UVALDE & GULF.—This company has applied to the Interstate Commerce Commission for a certificate for the construction of an extension of 4.7 miles from Brundage, Tex.

SAN LUIS VALLEY SOUTHERN.—This company has applied to the Interstate Commerce Commission for authority to construct an 18-mile extension from Jaroso, on the Colorado-New Mexico state line, to a point near Questa, N. M.

SOUTHERN PACIFIC.—Contracts for the construction of the bridge over Suisun bay between Martinez, Cal. and Army Point have been awarded, Siems, Helmers and Shaffner, Inc., St. Paul, Minn., being the successful bidder for the foundation work and the American Bridge Company for the superstructure. The cost of the bridge will be about $12,000,000.

ST. LOUIS-SAN FRANCISCO.—This company plans the construction of a freight station, 40 ft. x 600 ft. in area, at Oklahoma City, Okla.

TENNGA.—The Interstate Commerce Commission has authorized this company to acquire a 9.5-mile line which connects with the Louisville & Nashville at Conasauga, Tenn., and extending to Taylors, Ga., and to construct a 1.5-mile extension.

UNION PACIFIC.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch line of 7.5 miles in Larimer county, Colo.

WENATCHEE SOUTHERN.—The Interstate Commerce Commission has denied the application of this company for a further extension to July 1, 1929, of the time allowed for completion of two lines of railroad in Chelan, Kittitas and Benton counties, Wash.

WESTERN PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to build an extension from Paxton or Keddie, Calif., north about 120 miles to meet an extension of the Great Northern south from Klamath Falls, Ore., at Lookout, Calif.

THE KIAOCHOW TSINAN RAILWAY, Tsingtao, China, which operates a school to train young men for railway service has established a museum in connection with this school. In this museum it is collecting various objects pertaining to railroad work—models, diagrams, plans, maps, statistical reports, photographs, samples, etc., and would welcome additions to its collection from American sources.

Railway Finance

AKRON, CANTON & YOUNGSTOWN.—*1928 Earnings.*—Annual report for this company and the Northern Ohio Railway for 1928 shows net income after interest and other charges of $453,260 as compared with $320,632, in 1927. Selected items from the income statement follow:

	1928	1927	Increase or Decrease
Average mileage operated	171.36	171.34	.02
Railway Operating Revenues	3,538,026	3,171,453	366,573
Maintenance of way	665,729	500,550	165,179
Maintenance of equipment	348,785	373,208	24,423
Transportation	925,838	901,952	23,885
Total Operating Expenses	2,266,037	2,095,173	170,863
Operating ratio	64.0	66.0	2.0
Net Revenue From Operations	1,274,477	1,079,328	195,149
Railway tax accruals	172,532	121,071	51,460
Railway operating income not shown			
Hire of freight cars—Debit	386,400	381,800	4,600
Joint facility rents —Credit	30	30	.....
Net Railway Operating Income	722,461	584,010	138,451
Gross Income	801,282	652,194	149,087
Interest on funded debt	332,622	312,659	19,964
Total Deductions From Gross Income	348,021	331,562	16,458
Net Income	453,260	320,632	132,629

ALTON & EASTERN.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue $1,242,000 of first mortgage five per cent bonds and 5,926 shares of $100 par common stock, both issues to be delivered to the Illinois Company in payment of indebtedness to the latter company in connection with the purchase of a railroad extending from Grafton, Ill., to East St. Louis, 37.9 miles, being a portion of the line of the Chicago, Peoria & St. Louis, abandonment of which was authorized in 1923.

ATCHISON, TOPEKA & SANTA FE.—*Control of a Line by a Subsidiary.*—The Interstate Commerce Commission has authorized the Gulf, Colorado & Santa Fe to control an extension of the Cane Belt Railroad in Wharton and Fort Bend counties, Tex.

BALTIMORE & OHIO.—*Protests Against Unification Plan.*—The first protests against features of the Baltimore & Ohio unification plan have been filed with the Interstate Commerce Commission by the Southern and Louisville & Nashville, jointly, asking the commission to dismiss the application in so far as it proposes inclusion of the Chicago, Indianapolis & Louisville, and by the Business Protective Association, of Baltimore, asking the commission not to approve allocation of the Western Maryland to the B. & O. The Southern and L. & N., which jointly control the Monon through ownership of 93.4 per cent of the common and 77.47 per cent of the preferred stock, state that they will not sell their stock or lease the road or any part of it and that therefore the question as to whether it would be in the public interest that it should be acquired by the B. & O., becomes a moot question. The protests say that under paragraphs 2 and 3 of section 5 of the interstate commerce act neither the B. & O., nor any other carrier could acquire the road without their consent, and it is stated that it is the only road connecting southern and south-eastern territory served by them with Chicago and the Great Lakes. The Business Protective Association says that acquisition of the Western Maryland by the B. & O. would deprive Baltimore of competition and that it should not be considered by the commission before a decision on the Clayton law complaint alleging illegal acquisition of Western Maryland stock by the B. & O., especially in view of the application of the Pittsburgh & West Virginia to acquire the road.

The commission announced on March 5 that the Southern, L. & N., and the Baltimore organization would be allowed to intervene in the proceedings.

CANADIAN NATIONAL.—*Acquisition of Alberta Lines.*—The Minister of Railways of Canada in the House of Commons at Ottawa explained a bill covering purchase of Alberta lines in part as follows:

The object of the bill is to authorize the Canadian National and the Canadian Pacific jointly to acquire the Edmonton, Dunvegan & British Columbia, the Alberta Great Waterways, the Central Canada, and the Central Canada Express Company. It will authorize the acquisition of the capital stock of these companies, and the assumption of the undertakings of the crown in the right of the province of Alberta in respect to these railways and also in respect to the Pembina Railway. The bill will provide for the incorporation of the Northern Alberta Railways Company, in which are to be vested the jointly acquired railways. It will also ratify and confirm the agreement between the Canadian Pacific and the Canadian National regarding the joint acquisition and control by the Northern Alberta Railways. The basis upon which these lines have been acquired from the government of Alberta involves the assumption of obligations by the two railways aggregating approximately $26,000,000, in addition to the amount required to construct certain lines already under construction or to be constructed. The obligations to be assumed will be as follows:

Cash payment of $15,580,000 in instalments over a 10-year period.

Assumption of outstanding mortgages as follows:

$3,000,000 (£1,438,356) first mortgage 4 per cent debenture stock of the Edmonton, Dunvegan & British Columbia, due December 16, 1942; $2,420,000 first mortgage 4½ per cent bonds of the same company, due October 22, 1944.

The new company will assume the obligation to complete the construction of extensions of existing railways from Wembley and from Whitelaw to the Water Hole district. The company will assume the obligation to pay to the province the cost of the extensions just mentioned, and the portion of the cost incurred by the province up to the date of the delivery of the line. The new company undertakes to construct and put into operation within five years not less than sixty miles of additional branch line.

Quebec Montreal & Southern Purchase.—Continuing the Railways Minister said:

The cost of reproduction, less depreciation, of the railway, exclusive of equipment is $4,200,000. The equipment cost of reproduction, less depreciation, is $1,900,000. The purchase price is $6,000,000.

Through the purchase of this line the Canadian National Railways will be able to effect

(Continued on page 601)

Annual Report

Synopsis of Annual Report, Reading Company, Calendar Year, 1928

PHILADELPHIA, PA., February 28, 1929

To the Stockholders of Reading Company:

The Board of Directors submits herewith its 31st Annual Report.

The income for the year ended December 31, 1928, was as follows:

	1928
Railway Operating Revenues	$89,940,033.64
Railway Operating Expenses	69,826,345.31
Net Revenue from Railway Operations	$20,113,688.33
Railway Tax Accruals	$4,521,030.39
Uncollectible Railway Revenues	10,798.97
Total Taxes and Uncollectible Railway Revenues	$4,531,829.36
Total Railway Operating Income	$15,581,858.97
Nonoperating Income	1,516,989.60
Net Railway Operating Income	$17,098,848.57
Other Nonoperating Income	6,224,824.55
Gross Income	$23,323,673.12
Deductions from Gross Income	8,232,983.16
Net Income	$15,090,689.96
Income Appropriated for Sinking Fund and Reserve Funds	$42,143.62
Income Appropriated for Investment in Physical Property	3,170,000.00
Total Appropriations of Income	$3,212,143.62
Income Balance Transferred to Profit and Loss	$11,878,546.34

Electrification

After the completion of an exhaustive study of the problems presented and a thorough investigation of existing installations elsewhere, the Board of Directors on October 25, 1928, directed that the work of electrifying the following lines of the Company in the Philadelphia suburban zone be undertaken:

Reading Terminal to Chestnut Hill	10.8 miles
Wayne Junction to Lansdale	19.3 "
Glenside to Hatboro	6.7 "
Jenkintown to Langhorne	13.1 "
Total	49.9 "

Plans and specifications for this project are in course of preparation and it is expected that the electrification will be under way early in 1929 and will take about three years to complete. The first section to be electrified will be that from Reading Terminal to Lansdale.

The electrification of the line to Chestnut Hill involves the elimination of a number of grade crossings between Wingohocking and Chestnut Hill, as referred to elsewhere in this report.

Among the many benefits to be derived from the electrification will be a reduction in running time of trains and more frequent service.

Equipment

All of the equipment mentioned in the 1927 report as having been contracted for by Reading Company was delivered to the Company and placed in service during the year 1928, with the exception of the Stock Cars, which were under construction at the close of the year.

During the year 1928, contracts were awarded for the construction or purchase of the following additional equipment, which was delivered to the Company during the year:

4 8-car capacity carfloats,
2 10-car capacity carfloats,
1 Trailer,

and for the following equipment to be delivered during 1929:

6 Railway motor cars,
5 Trailers,
2 Diesel Oil-electric cars,
27 Motor cars for Section and Signal Forces.

Equipment Trust Obligations

At the close of the fiscal year ended December 31, 1928, there were outstanding Equipment Trust obligations to the extent of $14,985,000. These obligations were as follows:

Series	Outstanding Dec. 31, 1927	Payments During Year	Outstanding Dec. 31, 1928
H	$570,000	$190,000	$380,000
I	3,000,000	600,000	2,400,000
J	4,160,000	830,000	3,330,000
K	4,800,000	800,000	4,000,000
L	5,625,000	750,000	4,875,000
	$18,155,000	$3,170,000	$14,985,000

Of the $14,985,000 Equipment Trust Certificates outstanding December 31, 1928, $10,180,000 were owned by Reading Company, and $1,446,000 by subsidiary companies.

Port Richmond Grain Elevator

The new Port Richmond Grain Elevator referred to in previous reports was formally opened on January 14, 1928. The old elevator is being dismantled.

During 1928, The Philadelphia Grain Elevator Company issued $471,000 additional of its First Mortgage Bonds on account of the cost of construction of the new elevator, making the total amount of bonds outstanding to December 31, 1928, $2,471,000. These bonds were acquired by Reading Company and placed in its treasury.

Federal Valuation of Railroads

The physical valuation of Reading Company's property was continued during the year at a cost to the Company of $92,608.72.

The total expenditure incurred to December 31, 1928, on account of Federal Valuation of Reading Company's property under the Act of Congress approved March 1, 1913, was $1,206,563.94.

Following the conclusion in 1927 of the hearing of the testimony relative to this Company's protest against the Interstate Commerce Commission's tentative valuation as of June 30, 1917, the Company's opening brief was filed with the Commission on January 14, 1928, and the reply brief on April 27, 1928. The brief of the Bureau of Valuation was filed on March 20, 1928. The Commission has not yet issued a final report of the value of any of the properties owned, leased or controlled by Reading Company.

In September, 1928, the Interstate Commerce Commission issued several new orders "for the purpose of bringing the valuations of all common carriers, subject to the Interstate Commerce Act, to date." These orders require reports, in great detail, of all extensions, improvements or other changes in physical property made during the period from the date of the original valuation, June 30, 1917, to December 31, 1927.

The North Pennsylvania Railroad Company

The North Pennsylvania Railroad Company's issue of $408,000 Funding Loan 4% bonds dated November 1, 1898, matured November 1, 1928. The Interstate Commerce Commission, under Finance Docket No. 7165, authorized the Railroad Company to extend the issue for a period of fifty years from November 1, 1928, with interest at 4% per annum. Both principal and interest are guaranteed by Reading Company by endorsement.

Certificates of Interest

On May 25, 1928, Reading Company reported to the United States District Court for the Eastern District of Pennsylvania that pursuant to the Order of the Court entered December 2, 1927, The Baltimore and Ohio Railroad Company and the Estate of P. A. B. Widener executed and delivered to The National City Bank of New York the Trust Agreement in the form approved by the Court and transferred and delivered to the National City Bank, Trustee under the Trust Agreement, the Certificates of Interest in 353,325 shares of the Philadelphia and Reading Coal and Iron Corporation held by them, and that the National City Bank had exchanged the Certificates of interest for the definitive shares of the Coal Corporation pursuant to the Order of the Court. Reading Company further reported that all of the outstanding Certificates of Interest originally issued for 1,400,000 shares of the Philadelphia and Reading Coal and Iron Corporation had been exchanged for the definitive shares, except Certificates of Interest for 6958 shares, which were still outstanding.

On May 26, 1928, the Court directed that the Wilmington Trust Company, Trustee, offer for sale, on June 18, 1928, as an entirety, the 6958 shares of the Philadelphia and Reading Coal and Iron Corporation represented by the outstanding Certificates of Interest, and that the Wilmington Trust Company report the highest bid received for the said shares and the name of the bidder for the approval of the Court. The sale was duly held on June 18, 1928. The Wilmington Trust Company reported to the Court that the highest and best bid was the sum of $208,740.00, or at the rate of $30.00 per share, for the said 6958 shares of the said capital stock, and that the name and address of the highest bidder who submitted the bid was The National City Company, New York, N. Y.

[ADVERTISEMENT]

On June 19, 1928, the Court approved and confirmed the sale of the said shares to the National City Company and

ORDERED AND DECREED that upon the receipt of the purchase price in full for the said shares of stock the Wilmington Trust Company, Trustee, shall as soon as conveniently may be thereafter, and after deducting therefrom the costs of the said sale, including reasonable compensation to the said Trustee, apportion the net balance of the proceeds of the said sale among the holders of the outstanding certificates of interest for the said shares in proportion to the number of said shares represented by the said certificates in the name of the said holders, as the same may appear upon the books of the said Trustee, and pay over and deliver to the holders of the said certificates the amount thereby shown to be due to them, upon delivery to the Trustee for cancellation of the said outstanding certificates. The said Wilmington Trust Company, Trustee, is directed to make further report to this Court when distribution of the aforesaid net proceeds shall have been made to the certificate holders to the extent that the said holders shall surrender their certificates for cancellation, and obtain further instructions from the Court, if any be required, concerning the disposition of any and all funds in the hands of the said Trustee which may be apportioned to holders of certificates who may not be found, or who may not deliver the certificates as aforesaid for cancellation within a reasonable time after the date of this Order.

The net proceeds of the sale, after deducting expenses of the sale, were $29.50 per share. To December 31, 1928, holders of Certificates of Interest for 6321 shares of the Philadelphia and Reading Coal and Iron Corporation had presented their Certificates to the Wilmington Trust Company, Trustee, for redemption, leaving outstanding and unredeemed Certificates for 637 shares.

Profit and Loss Account

For Year Ended December 31, 1928

Account	Dr.	Cr.
Credit balance December 31, 1927		$9,161,625.41
Balance transferred from income for the year ended December 31, 1928		11,878,546.34
Profit on road and equipment sold		822,377.80
Unrefundable overcharges		54,160.44
Donations for construction of sidings		11,595.86
Miscellaneous credits		110,320.02
Dividend appropriations of surplus	$8,397,602.00	
Surplus appropriated for investment in physical property	11,595.86	
Debt discount extinguished through surplus	101,730.89	
Loss on retired road and equipment	243,440.56	
Miscellaneous debits	2,038,890.48	
Credit balance December 31, 1928	11,245,366.08	
Total	$22,038,625.87	$22,038,625.87

GENERAL BALANCE SHEET—ASSETS

December 31, 1928

INVESTMENTS:			
Investment in road and equipment			$294,532,862.38
Improvements on leased railway property			30,152,149.63
Deposits in lieu of mortgaged property sold:			
Cash		$7,012.32	
Securities	$2,447,704.23		
Less company's securities	1,685,600.00	762,104.23	769,116.55
Miscellaneous physical property			13,938,859.82
			$339,392,988.38
INVESTMENTS IN AFFILIATED COMPANIES:			
Stocks			$22,611,482.36
Bonds			12,753,863.92
Advances			8,112,527.52
			$43,477,873.80
OTHER INVESTMENTS:			
Stocks			$27,309,965.06
Bonds			11,186,134.51
Notes			7,182.00
Advances			101,702.99
Miscellaneous			423,363.27
			$39,028,347.83
Total Investments			$421,899,210.01
CURRENT ASSETS:			
Cash			$6,090,149.18
Special deposits			38,744.69
Loans and bills receivable			323,536.80
Traffic and car-service balances receivable			2,337,985.07
Net balance receivable from agents and conductors			1,966,794.40
Miscellaneous accounts receivable			2,004,092.92
Material and supplies			7,567,353.68
Interest and dividends receivable			971,471.20
Total Current Assets			$21,300,127.94
DEFERRED ASSETS:			
Working fund advances			$53,131.95
Insurance and other funds	$1,072,127.94		
Less company's securities	415,000.00		657,127.94
Other deferred assets			102,600.88
Total Deferred Assets			$812,860.77
UNADJUSTED DEBITS:			
Rents and insurance premiums paid in advance			$4,888.95
Discount on funded debt			121,582.47
Other unadjusted debits			793,714.94
Total Unadjusted Debits			$798,603.89
Securities issued or assumed—unpledged	$14,317,116.67		
Securities issued or assumed—pledged	1,468,666.66		
Grand Total			$444,810,802.61

Reading Transportation Company

On January 27, 1928, a charter was granted by the Governor of Pennsylvania to Reading Transportation Company, which had been formed to conduct a motorcoach service in the several counties through which the lines of Reading Company are operated. The charter of the Company was amended September 27, 1928, so as to permit the transportation of groups and parties between certain points.

The authorized capital of the Company is $1,000,000, of which $300,000 had been issued and acquired by Reading Company to December 31, 1928.

The motorcoach routes operated by the Reading Transportation Company at the close of the year 1928 were as follows:

Jenkintown to New Hope, Pa.	24.4 miles
Reading to Hamburg, Pa.	17.0 "
Carlisle to Shippensburg, Pa.	22.5 "
Carlisle to Gettysburg, Pa.	29.9 "
Pottsville to Lykens, Pa.	32.0 "
Pottsville to Shenandoah, Pa.	12.0 "
Doylestown to Langhorne, Pa.	19.3 "
Doylestown to Lansdale, Pa.	12.0 "
Pottstown to Bally, Pa.	13.3 "
Milton to West Milton, Pa.	1.2 "
Atlantic City to Cape May, N. J., via Ocean City and Wildwood	45.2 "
Total	228.8 "

The Reading Transportation Company had 32 motorcoaches in operation at the close of 1928.

During the year a garage building was constructed at Doylestown for the accommodation of motorcoaches and a similar structure has been authorized at Newtown, Pa.

Motorcoach service along the above routes has proven economical and satisfactory.

Operation of Subsidiary Companies

Reading Company entered into a contract with The Phila-

GENERAL BALANCE SHEET—LIABILITIES

December 31, 1928

	Book Liability	Held by or for Company	
STOCK:			
First preferred	$28,000,000.00	$8,800.00	$27,991,200.00
Second preferred	42,000,000.00	29,350.00	41,970,650.00
Common	70,000,000.00	10,900.00	69,989,100.00
Total Stock	$140,000,000.00	$49,050.00	$139,950,950.00
LONG-TERM DEBT:			
Funded debt secured by mortgage	$97,359,971.42	$6,185,333.33	$91,174,638.09
Funded debt secured by stock collateral	24,295,000.00	1,472,000.00	22,823,000.00
Equipment trust obligations	14,985,000.00	10,180,000.00	4,805,000.00
Total Funded Debt Unmatured	$136,639,971.42	$17,837,333.33	$118,802,638.09
Nonnegotiable debt to affiliated companies			320,040.50
Total Long-Term Debt			$119,122,678.59
CURRENT LIABILITIES:			
Traffic and car-service balances payable			$2,453,478.63
Audited accounts and wages payable			5,898,477.97
Miscellaneous accounts payable			163,532.80
Interest matured unpaid			1,399,947.83
Dividends matured unpaid			52,213.50
Funded debt matured unpaid			57,888.90
Unmatured dividends declared			1,819,488.50
Unmatured interest accrued			703,355.71
Unmatured rents accrued			264,028.82
Other current liabilities			67,070.55
Total Current Liabilities			$12,879,483.21
DEFERRED LIABILITIES:			
Other deferred liabilities			$473,599.66
UNADJUSTED CREDITS:			
Tax liability			$5,897,565.68
Premium on funded debt			13,874.77
Insurance and casualty reserves			1,063,652.74
Accrued depreciation—Road			6,613,973.17
Accrued depreciation—Equipment			51,311,462.36
Other unadjusted credits			533,732.12
Total Unadjusted Credits			$65,420,386.07
CORPORATE SURPLUS:			
Additions to property through income and surplus			$93,980,339.00
Funded debt retired through income and surplus			1,738,000.00
Total Appropriated Surplus			$95,718,339.00
Profit and loss credit balance			$11,245,366.08
Total Corporate Surplus			$106,963,705.08
GRAND TOTAL			$444,810,802.61

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delphia Grain Elevator Company for the direct operation of the elevator property for a period of ten years from January 1, 1928. Under this arrangement Reading Company pays all expenses of the Elevator Company, including interest, taxes and other charges, and retains all receipts and income derived from the operation of the property.

Reading Company also entered into similar contracts with the following rail subsidiaries to become effective January 1, 1929:

Catasauqua and Fogelsville Railroad Company,
Gettysburg and Harrisburg Railway Company,
North East Pennsylvania Railroad Company,
Perkiomen Railroad Company,
Philadelphia and Chester Valley Railroad Company,
Philadelphia, Newtown and New York Railroad Company,
Pickering Valley Railroad Company,
Port Reading Railroad Company,
Reading and Columbia Railroad Company (including the Reading, Marietta and Hanover Railroad Company),
Stony Creek Railroad Company, and
Williams Valley Railroad Company.

These latter contracts have all been approved by the Interstate Commerce Commission, Finance Dockets Nos. 7142, and 7184/7193, inclusive; and by the Public Service Commission of Pennsylvania, with the exception of that with The Port Reading Railroad Company, which latter contract was duly approved by the Public Utilities Commission of New Jersey.

It is anticipated that considerable economy will be effected through this method of operation and that Reading Company will be in position to render more efficient service than was heretofore possible through the separate operation of the several companies.

Bloomsburg and Sullivan Railroad

The Bloomsburg and Sullivan Railroad Company, operating a railroad between Bloomsburg and Benton, Columbia County, Pennsylvania, a distance of 20 miles, defaulted in the payment of its issue of First Mortgage Bonds which matured January 1, 1928. The Fidelity-Philadelphia Trust Company, Trustee of the Mortgage, thereupon offered the property for sale at public auction on October 23, 1928. Reading Company interchanged considerable traffic with the Bloomsburg and Sullivan Railroad and in order to continue this traffic and to keep the railroad in operation for the benefit of the community served thereby became the purchaser, taking over the operation of the property on December 1, 1928. The purchase was duly approved by the Interstate Commerce Commission, under Finance Docket No. 7195, and by the Public Service Commission of Pennsylvania.

The Bloomsburg and Sullivan Railroad, with the former Rupert and Bloomsburg Branch, extending together from Rupert to Benton, now forms the Bloomsburg Branch of the Shamokin Division of Reading Company.

Funded Obligations

Changes occurred in the funded obligations of the Company during the year 1928 as follows:

Mortgage and Collateral Trust Bonds outstanding December 31, 1927		$114,000,804.76
General and Refunding Mortgage 4½% Bonds issued, account similar amount of General Mortgage 4's surrendered		16,000.00
		$114,016,804.76
Real Estate Mortgages paid off during year	$2,500.00	
Reading Company's proportion of joint General Mortgage 4% bonds of Reading Company and The Philadelphia and Reading Coal and Iron Company surrendered for exchange under Plan of Segregation	16,000.00	
Reading Company's proportion of joint General Mortgage 4% bonds redeemed by Trustee	666.67	19,166.67
On December 31, 1928, bonds outstanding were		$113,997,638.09

During the year 1928, $25,000 General Mortgage 4% Bonds of Reading Company and The Philadelphia and Reading Coal and Iron Company were surrendered to the Central Union Trust Company of New York, Trustee, for redemption or exchange in accordance with the order of the Court in the Segregation Case, leaving outstanding $200,000 Bonds on December 31, 1928.

These bonds are secured by a deposit with the Trustee of a similar amount of United States Liberty Loan Bonds as the mortgage under which they were originally issued was satisfied pursuant to the Segregation Decree.

Record is made of the death on January 24, 1928, of Mr. Ira A. Place, who had been a Director of the Company since June 6, 1922, and on November 12, 1928, of Mr. John S. Sneyd, Assistant Treasurer, who had been in the service of Reading Company and its predecessor companies for over fifty-five years.

The Management acknowledges with grateful appreciation the faithful and valuable services rendered by the officers and employes of the Company during the past year.

By order of the Board of Directors.

AGNEW T. DICE,
President.

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Financial

(*Continued from page 598*)

economies in the operation of lines on the Levis division to the extent of $150,000 per year, and expect to make use of this low gradient line for heavy freight service between Montreal and Quebec. The Levis division is the third heaviest traffic division on the system, and consideration has been given for some time to the possibility of effecting grade revisions, so as to reduce the grades on the present line between Montreal and Quebec, which are 1 per cent and the Quebec, Montreal & Southern from Montreal to Fortierville will make it possible to obtain a 0.4 per cent gradient between Montreal and Quebec through the construction of a twenty-mile connection with the existing line from Fortierville.

CENTRAL VERMONT.—*Reorganization.*—Formation of a new company to operate the Central Vermont, placed in the hands of receivers after the floods of 1927, is to follow the passing of legislation in Vermont subsequent to the bill already signed by Gov. John E. Weeks. The Canadian National rehabilitated the Central Vermont after the floods. The bill signed by Governor Weeks will allow the Canadian National to own stocks and bonds in the new company to be formed, and otherwise to bear the same relations to it as obtained with the old Central Vermont Railway.

CONDON, KINZUA & SOUTHERN.—*Promissory Note.*—The Interstate Commerce Commission has authorized this company to issue a six per cent promissory note for $125,000 to the Kinzua Lumber Company in payment of indebtedness.

DETROIT & MACKINAC.—*Abandonment.*—Examiner O. D. Weed of the Interstate Commerce Commission in a proposed report recommends that the commission authorize the abandonment of part of the Hillman branch from Emerson to Hillman, Mich., 12.93 miles, and 1.43 miles of side track.

ELWOOD, ANDERSON & LAPELLE.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its 1.4 miles of line with 3.4 miles of side tracks at Elwood, Ind. The line will be operated henceforth by the New York, Chicago & St. Louis.

TRINITY VALLEY & NORTHERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its track from Fullerton to Lumm, Tex., 12.2 miles, built primarily for logging purposes.

TEXAS & PACIFIC.—*Bonds.*—Kuhn, Loeb & Co. has purchased, subject to the approval of the Interstate Commerce Commission, $20,000,000 principal amount of this Company's general and refunding mortgage 5 per cent bonds, series "C", due April 1, 1979, which they are offering at 99½ and accrued interest. These bonds will be issued under the general and refunding mortgage of the company, dated January 1, 1924, and will be secured by direct lien on all the lines of the company.

WESTERN MARYLAND. — *Bonds.* — This company has applied to the Interstate Commerce Commission for authority to nominally issue $3,171,000 of first and refunding mortgage 5½ per cent gold bonds, to be held in its treasury pending further order of the commission.

Average Prices of Stocks and of Bonds

	Mar. 5	Last week	Last year
Average price of 20 representative railway stocks.	135.74	133.06	116.96
Average price of 20 representative railway bonds..	91.24	91.49	96.76

Dividends Declared

Missouri, Kansas-Texas.—Preferred, 1¾ per cent, quarterly, payable March 30 to holders of record March 15.

New York, Lackawanna & Western.—1¼ per cent, quarterly, payable April 1 to holders of record March 14 a.

Reading.—2nd Preferred, $.50, quarterly, payable April 11 to holders of record March 21.

St. Louis, Rocky Mountain & Pacific.—Common, ½ of 1 per cent, quarterly; Preferred, 1¼ per cent, quarterly, both payable March 31 to holders of record March 15.

St. Louis Southwestern.—Preferred, 1¼ per cent, quarterly, payable March 30 to holders of record March 11.

Wheeling & Lake Erie.—Prior Lien, $3.50, for period from November 1, 1917, to May 1, 1918, payable March 15 to holders of record March 5.

Railway Officers

Executive

G. E. Patterson, general manager of the Illinois Central, with headquarters at Chicago, has been promoted to vice-president in charge of operation, to succeed **A. E. Clift,** who has been elected president of the Central of Georgia and will be succeeded by **W. Atwill,** general superintendent of the Northern lines, with headquarters at Chicago. Mr. Patterson has been connected with the operating department of the Illinois Central for nearly 40 years. He was born on June 23, 1869, in Marion county, Ill., entering railway service on May 8, 1889, as an agent and telegraph operator on the Illinois Central. Mr. Patterson served in these capacities until October, 1903, when he was advanced to division agent. In September, 1904, he was promoted to inspector of weights, then being further promoted to trainmaster in August, 1905, a position

G. E. Patterson

he held until his promotion to superintendent of the Springfield division, in 1913. Two years later he was transferred to the Louisiana division and in October, 1918, he was transferred to the Illinois division, where he remained until July, 1920, when he was promoted to acting general superintendent of the Northern lines of the Illinois Central, with headquarters at Chicago. Mr. Patterson was promoted to general superintendent of the Northern lines on April 1, 1923, then being further promoted to general manager of the Illinois Central System, with headquarters at Chicago in November, 1924.

Mr. Atwill, who has been promoted to general manager of the Illinois Central System, entered railway service as night operator for that railroad at Rockford, Ill. Later he served as train dispatcher on the Chicago & North Western and the Grand Trunk, returning to the Illinois Central in 1901 as train dispatcher at Dubuque, Iowa. Subsequently Mr. Atwill was advanced through the positions of chief dispatcher at Cherokee, Iowa, at Fort Dodge, and at Dubuque and in 1907 he was promoted to trainmaster at Fort Dodge. Later he was transferred to Dubuque and in 1915 he was promoted to superintendent of the Minnesota division, with headquarters at the same point. In 1917 Mr. Atwill was transferred to the St. Louis division, with headquarters at Carbondale, Ill., where he remained until 1923, when he was promoted to general superintendent of the Southern lines with headquarters at New Orleans, La., then being transferred to general superintendent of the Northern lines, with headquarters at Chicago, in 1925.

William Atwill

Financial, Legal and Accounting

C. S. Pope, assistant to the comptroller of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been promoted to secretary to succeed **W. R. Harley,** deceased, with headquarters at the same point.

Operating

J. C. Hughes has been appointed acting trainmaster of the Second division of the Oregon-Washington Railroad & Navigation Company, with headquarters at La Grande, Ore.

Frank McElroy, assistant superintendent on the Michigan Central at Jackson Junction, Mich., has been promoted to superintendent of the Detroit division, with headquarters at Detroit, Mich.

C. T. O'Neal, vice-president of the Fort Smith & Western, with headquarters at Fort Smith, Ark., has resigned to become general manager in charge of operations and maintenance of the Buffalo, Rochester & Pittsburgh, with headquarters at Rochester, N. Y. He is succeeded by **L. B. Barry, Jr.,** superintendent at Fort Smith, who in turn is replaced by **W. G. Koch.**

M. E. Madden, who has been appointed general superintendent of the Southern, with headquarters at Birmingham, Ala., entered the service of that road as a fireman in July, 1891. He was promoted to engineman in December, 1899, and in 1905 he was promoted to road foreman of engines on the Mobile division. Two years later he was appointed trainmaster of that division and in May, 1917, he was transferred to the Atlantic division in the same capacity. He served in this position until February, 1919, at which time he was promoted to superintendent of the Mobile division. In March, 1920, he was appointed superintendent of the Georgia Southern & Florida, later serving in the same position on the Alabama Great Southern at various points, including Alexandria, Va., and Greensboro, N. C. He served in the latter capacity until February 7 of the current year, when he was promoted to the position of general superintendent of the Alabama district.

William E. Kingston, who has been promoted to superintendent of the Portage division of the Canadian Pacific, with headquarters at Winnipeg, Man., has been connected with that railway for nearly 27 years. He was born at Mt. Forest, Ont., on May 1, 1884, and after a public school education in that city and one year of university work

William E. Kingston

he entered railway service at the age of 18 years as a clerk in the engineering department of the Canadian Pacific on the line between Winnipeg and Calgary, Man. During the following 17 years Mr. Kingston was advanced successively through the positions of rodman, secretary, clerk and chief clerk to the general superintendent at Calgary, assistant chief clerk in the office of the general manager at Winnipeg, chief clerk to the general superintendent at Vancouver, B. C., and chief clerk to the vice-president and general manager at Winnipeg. On January 11, 1919, he was promoted to trainmaster at Wilkie, Sask., later being promoted to assistant

superintendent at Moose Jaw, Sask. He was then transferred successively to Kenora, Ont., to the Portage division at Winnipeg, and to the Winnipeg Terminal. Mr. Kingston's promotion to superintendent of the Portage division became effective on February 14.

T. J. Quigley, who has been promoted to general superintendent of the Southern lines of the Illinois Central, with headquarters at New Orleans, La., has been connected with the engineering and operating departments of the Illinois Central System for more than 24 years. He was born at Paducah, Ky., on February 4, 1883, and graduated from Virginia Military Institute in 1904. He entered railway service on January 1, 1905, as a track apprentice on the Illinois

T. J. Quigley

Central, then being advanced successively through the positions of chainman, rodman, resident engineer, assistant engineer, supervisor and assistant roadmaster. In 1914, Mr. Quigley was promoted to roadmaster at McComb, Miss., then being transferred to the operating department as trainmaster at the same point in 1917. He was promoted to superintendent of the Louisiana division, with headquarters at McComb in 1919, where he remained until 1926, when he was transferred to the Illinois division, with headquarters at Champaign, Ill.

W. T. Long, Jr., has been appointed superintendent of transportation of the Texas & Pacific, with headquarters at Dallas, Tex., succeeding **B. C. James,** who has been appointed supervisor of wages, with headquarters at the same point. **L. L. Oliver** has been appointed senior trainmaster of the Fort Worth division with headquarters at Fort Worth, Tex. **P. McDermott** has been appointed terminal trainmaster of the Fort Worth and Lancaster yards, with headquarters at Fort Worth. **O. Marshall** has been appointed trainmaster of the district of the Fort Worth division from Lancaster yard to Baird, Tex., with headquarters at Fort Worth. **W. E. Coffer** has been appointed trainmaster of the district of the same division from Fort Worth to Mineola, Tex., including the Mineola and Dallas yards, with headquarters at Dallas, Tex. **J. C. McGlothlin** has been appointed trainmaster of the district from Mineola to Marshall, Tex., including the Longview Junction yard, with headquarters at Longview Junction, Tex. **L. C. Galbraith** has been appointed trainmaster of the district from Texarkana, Tex., to Cut Off Junction, including the Marshall yard, with headquarters at Marshall. **G. A. Runyan** has been appointed trainmaster of the Shreveport sub-division of the Louisiana division, with headquarters at Hollywood yard, La. **D. E. Clifford** has been appointed trainmaster of the district from Alexandria, La., to Eola Junction, including the Avoyelles, Opelousas, Eunice, Melville and Marksville branches, with headquarters at Alexandria. **J. G. Brannon** has been appointed trainmaster of the territory of the same division from Red Cross, La., to Gouldsboro, including the Ferriday, Napoleonville and LaFourche branches, with headquarters at Addis, La. **C. Percy** has been appointed trainmaster of the territory on the Rio Grande division from Baird, Tex., to Big Spring, including the Baird yard, with headquarters at Big Spring. **D. E. Crouser** has been appointed trainmaster of the territory from Big Spring to Sierra Blanca, Tex., including the Big Spring and El Paso (Tex.) yards, with headquarters at Big Spring.

E. D. Holcomb, superintendent of the Springfield division of the Illinois Central, with headquarters at Clinton, Ill., has been transferred to the Illinois division, with headquarters at Champaign, Ill. **J. W. Kern, Jr.,** district engineer of the Southern lines, with headquarters at New Orleans, La., has been appointed superintendent of the Springfield division, succeeding Mr. Holcomb, while **J. E. Fanning,** district engineer of the Western lines, with

J. W. Kern, Jr.

headquarters at Waterloo, Iowa, replaces Mr. Kern. **G. M. O'Rourke,** roadmaster of the St. Louis division, succeeds Mr. Fanning. **W. R. Gillam,** roadmaster of the Springfield division, with headquarters at Clinton, is transferred to Carbondale, while **H. C. Hayes,** assistant engineer at Chicago, succeeds Mr. Gillam. **E. N. Vane,** trainmaster of the Centralia district, has been assigned to other duties and is succeeded by **J. McEwen,** trainmaster of the St. Louis district, while **C. F. Duggan** succeeds Mr. McEwen.

Mr. Kern, Jr., entered the employ of the Illinois Central as a chainman at Corinth, Miss., on October 3, 1905, and in July of the following year was promoted to rodman. In October, 1909, he was promoted to instrumentman and masonry inspector at New Orleans, La., and in June, 1911, to resident engineer at Chicago. In October of the same year he was made assistant engineer of the New Orleans division which position he held until January, 1913, when he was promoted to supervisor of the St. Louis division. He enlisted with the

G. M. O'Rourke

thirteenth engineers of the U. S. Army in June, 1917, and upon his return to civilian life in July, 1919, was made roadmaster of the Mississippi division. On May 20, 1920, he was transferred to the St. Louis division and on January 1, 1923, was appointed district engineer of the Southern lines, which position he has held until his recent promotion.

Mr. O'Rourke was born on February 22, 1889, at Chicago and was educated at Armour Institute of Technology. He entered the employ of the Illinois Central as an engineering apprentice on the St. Louis division and on December 1, 1906, was made chainman of the Chicago division. On September 1, 1907, he became a draftsman in the chief engineer's office at Chicago; on July 27, 1909, a rodman on the Kentucky division; on September 1, 1909, a draftsman at Chicago; on October 1, 1909, a rodman at Chicago; on November 18, 1909, a masonry inspector at Chicago; on November 1, 1910, an instrumentman on the Memphis division; and on September 1, 1911, a masonry inspector at Chicago. He held the latter position until January 11, 1914, when he became resident engineer at Dyersburg, Tenn. On October 28, 1914, he was appointed chief draftsman in the valuation department and on August 5, 1915, assistant engineer of the St. Louis division. He held the latter position until June 1, 1917, when he was appointed road supervisor

of the Carbondale district, St. Louis division. On February 1, 1919, he was made roadmaster of the Indiana division and on January 1, 1923, was transferred to the St. Louis division, where he was located until his recent promotion.

Traffic

T. O. Chrismer has been appointed central manufacturing district agent of the Wabash, with headquarters at Chicago.

J. C. Stone, assistant general freight and passenger agent of the Western Pacific, with headquarters at Sacramento, Cal., has resigned and the position has been abolished.

W. E. Scott, general agent of the Chicago & North Western, with headquarters at Kansas City, Mo., has been transferred to Portland, Ore., to succeed **E. C. Griffin,** deceased, and will be succeeded by **O. Olson.**

W. H. Skillen, general agent of the Boston & Maine, with headquarters at Kansas City, has been appointed general western agent, with headquarters at Chicago, to succeed **T. D. Elliott,** deceased, and will be succeeded by **F. A. Ruffell,** traveling representative at Detroit, Mich.

J. B. McCorkle, coal and ore agent of the Pennsylvania, with headquarters at Cleveland, Ohio, has been promoted to general coal freight agent, with headquarters at Pittsburgh, Pa., and will be succeeded by **J. H. Cross,** assistant general freight agent, with headquarters at Buffalo, N. Y.

B. M. Bowman, general passenger agent of the Cleveland, Chicago, Cincinnati & St. Louis, with headquarters at Cincinnati, Ohio, has been promoted to passenger traffic manager, with the same headquarters and will be succeeded by **H. Bertermann,** assistant general passenger agent, with headquarters at Cincinnati.

E. F. Bowman, city passenger agent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at St. Paul, Minn., has been promoted to general agent with the same headquarters. **T. A. Morken,** general agent, with headquarters at St. Paul, has been transferred to Minneapolis. **J. J. Oslie,** city passenger agent, with headquarters at Minneapolis, has been promoted to assistant general passenger agent, with headquarters at St. Paul.

Roy A. Pearce, who has been promoted to general passenger agent of the Chicago & Alton, with headquarters at Chicago, has been in the service of that railway for nearly 23 years. He was born at Pleasant Hill, Ill., on September 29, 1890, and attended public schools at Fulton, Mo., later completing his education through correspondence courses. At the age of 15 years he entered railway service as a telegraph operator on the Alton at Grain Valley, Mo., later serving in that capacity and as station agent at various points in Missouri until June 1, 1910. Mr. Pearce was then advanced to city passenger agent at Kansas City, Mo., where he remained until March 1, 1914, when he was further advanced to special passenger representative. On July 1, 1920, he was transferred to Chicago, being promoted to general agent of the passenger department on March 1, 1922. His further promotion to general passenger agent became effective on February 1.

Roy A. Pearce

Engineering, Maintenance of Way and Signaling

Henry S. Loeffler, assistant engineer in the bridge department of the Great Northern, has been promoted to bridge engineer, with headquarters at St. Paul, Minn., succeeding **John A. Bohland,** who has been appointed office engineer in the bridge department with headquarters as before at St. Paul. **George V. Guerin,** draftsman and inspector in the bridge department has been promoted to assistant bridge engineer of the lines east, with headquarters at St. Paul. **Harry A. Gerst,** bridge engineer of the system at St. Paul, has been appointed assistant bridge engineer of the lines west, with headquarters at Spokane, Wash.

Mechanical

George H. Massy, general mechanical inspector of the Central of New Jersey, has been promoted to assistant master mechanic at the Communipaw engine terminal, Jersey City, N. J.

F. N. Hibbits, who has been appointed consulting superintendent of motive power of the Lehigh Valley, was born on February 3, 1866, at Muncie, Ind. He was graduated from Rose Polytechnic Institute, Terre Haute, Ind., and entered railway service in 1886, being consecutively to 1894, machinist and draftsman of the Cleveland, Columbus, Cincinnati & Indianapolis (now part of Cleveland, Cincinnati, Chicago & St. Louis); engineer of tests of the New York, Lake Erie & Western (now part of Erie), and mechanical engineer of the same road. From March, 1894, to November 1, 1895, he was master mechanic of the Rochester division and from the latter date until June, 1899, he served as freight trainmaster of the New York division of the Erie at Port Jervis, N. Y. He was appointed superintendent of the same road at Carbondale, Pa., in 1899 and in 1901 he was appointed mechanical engineer of the Union Pacific. He then became assistant superintendent of motive power and machinery for the same road and in 1904 he was appointed consulting mechanical engineer of the Southern. In July of the same year he became mechanical superintendent of the New York, New Haven & Hartford, following which he became superintendent of motive power for the Lehigh Valley. He voluntarily resigned from this position in February, 1929, at which time he was appointed consulting superintendent of motive power, with headquarters as before at Bethlehem, Pa.

Special

J. H. Chappell has been appointed supervisor of fire prevention and insurance of the Wabash, to succeed **H. G. Spaulding,** deceased.

Obituary

Franklin W. Cram, at one time president and general manager of the Bangor & Aroostook, died at his home in Bangor, Me., on March 5, at the age of 82.

Lloyd Grimes, master mechanic of the Illinois Central, with headquarters at Jackson, Tenn., died on February 23 at Chicago, following a lingering illness which began in October.

E. L. Sinclair, division engineer of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Marion, Iowa, died suddenly on February 28 from a cerebral hemorrhage.

Harry R. Charlton, manager of the advertising bureau of the Canadian National Railways, with headquarters at Montreal, Que., died in that city on February 15. Mr. Charlton was born at St. Johns, Que., on February 9, 1866. He was educated at St. Johns High School and first entered railway service with the Waterloo & Magog Railway, serving with that road for about a year, after which time he was engaged in newspaper work for a short period. In 1891 he entered the advertising department of the Canadian Pacific, remaining with that road for five years. He became advertising and publicity manager of the Grand Trunk in 1898 and following the amalgamation of the various lines into the present Canadian National in 1923, Mr. Charlton was appointed manager of the advertising bureau. He served in the latter position until his death.